PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.

DATE DUE	DATE DUE	DATE DUE
1 5 1998 T43		
April 30, 1992		
132 June 8, 1992		

MSU Is An Affirmative Action/Equal Opportunity Institution

c:\circ\datedue.pm3

THE ADVERTISER'S PLACE IN
THE EVOLUTION OF VIDEOTEX

By

Mark Christopher Lockhart

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Advertising

1983

ABSTRACT

THE ADVERTISER'S PLACE IN

THE EVOLUTION OF VIDEOTEX

By

Mark Christopher Lockhart

To date, most of the literature covering the field of videotex has not been comprehensive work. In addition, very little has been written about the place advertising will take in the introduction of this new technology. The thesis objective was to put together a review of the present situation surrounding videotex, including a look at the technology, the services, legal issues advertisers must face and where advertising will fit into videotex. Also, a mail survey, sent to 99 advertisers with videotex experience, was conducted to uncover the objectives, goals, strategies and plans advertisers have used with videotex. Basically,

advertisers were experimenting with different approaches to videotex advertising, but increasing product awareness, product knowledge and sales were the main goals. advertisers were primarily interested in two things: seeing videotex gain at least a penetration level greater than twenty percent and proof that users will access a system frequently.

ACKNOWLEDGMENTS

I wish to thank my committee members for their help and patience over the past year. My gratitude to Martin Block, Keith Adler, and especially to Rick Ducey, who opened his files and freely gave me his time whenever I was in need. I want to note the contributions of Rob Rynski, who prepared the graphics found within the thesis, and of Bill Waites, Vice Chairman at Stone & Adler, who critiqued the thesis survey.

Credit must also go to the many individuals who provided me with invaluable literature on the subject of videotex and to those individuals who took the time to complete the survey. Without all of these people my thesis would have never been worth completing.

Lastly, my heartfelt gratitude goes to my loving wife, Sheryl, who spent many long hours herself pushing me and critiquing my writing. Her patience with me was greatly appreciated.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter I

INTRODUCTION

There is an anonymous saying that is appropriate for the current state of videotex participation with regards to U.S. corporations:

> There are three types of companies. Those who make things happen. Those who watch things happen. Those who wonder what happened.

A few organizations are in the avant-garde of the emerging videotex technology, meticulously searching for the keys to unlock its acceptance and concurrent profits. Members of this elite group include Sears Roebuck & Co., AT&T, Keycom Electronic Publishing, Times-Mirror, Knight-Ridder and Cox Cable Communications. Many other organizations have also invested a great deal of time and money into experimentation of videotex and related data communication technologies. Then, there are those organizations who are standing back surveying videotex's evolution, but withholding from any involvement until the level of risk is significantly

1

reduced. Lastly, there are those companies, the majority of corporate America, which are naive to the existence of videotex and who could suffer because of it.

The major problem that has limited the introduction of videotex can best be described as a triangular "chicken-or-the-egg" syndrome. Hardware manufacturers want an established mass market before they commit resources to mass production and its resulting economies of scale and lower unit prices. Meanwhile, potential consumers cannot justify the high cost of equipment and services, especially in light of their lack of knowledge about videotex, so few have subscribed to available services. Consequently, the advertisers who could help underwrite the cost of videotex are wary about committing themselves to this new medium which they consider technically inferior and suffering from both an unidentifiable market and a lack of acceptance from consumers.

My hypothesis is that it will take the commitment of advertisers, along with that of manufacturers and system operators, to break the syndrome and begin the next evolutionary step of full-scale introduction. However, I believe that the commitment of most importance is that of the advertisers. As with any other medium that relies on reaching a large percentage of America, videotex will need

the dollars advertising can generate to become cost efficient for consumers. Therefore, the focal point of my primary research was on uncovering the desires and needs of advertisers who have experience with advertising on videotex systems. My objective was to survey advertisers with experience advertising on videotex systems and find out what they were trying to accomplish via videotex, at what costs, and on what time schedule; then, come to some conclusions which could benefit everyone involved in the technology of videotex.

However, because little is known about videotex and the path its evolution will take, it is important to keep an open mind when reading this thesis. There are two reasons for my pursuing the thesis: to discover the needs of advertisers and to provide a review of the issues which other people can use to gain a better overall perspective of how videotex will evolve and what to expect from advertising on videotex. It is hoped that someone will begin where this thesis leaves off and pursue further the direction and form advertising on videotex will take. Contained within the structure of this thesis are chapters examining the current state of videotex technology, consumer acceptance of various services that can be provided, a brief look at key legal issues advertisers should consider and a look at videotex advertising.

One last point to be made is that videotex is only one of the new electronic media technologies. While videotex will not be the first new technology related medium to diffuse through our society, it has the potential to create the greatest change. However, to gain a complete understanding of the changing world of media related technology, it would be necessary to investigate subscription television (STV), low-power television (LPTV), satellite master antenna service (SMATV), cable television and cable's data communication potential, direct broadcast satellites (DBS), videocassettes and videodiscs, multi-point distribution services (MDS), the diffusion of personal computers, along with the impact these technologies have on presently available media. It would also be helpful to investigate the impact of advances in communication technologies: fiber optics, data compression techniques and switching networks.

Chapter II

VIDEOTEX TECHNOLOGY

Videotex is the term used to describe the user controlled one or two-way delivery of digitally encoded text and graphic information from a database to subscribing customers. Basically, there are three media over which videotex information can be transmitted to its audience: over-the-air broadcast signals (teletext), either fiber optic or coaxial cable lines (cable text--not to be confused with cabletext which is an alphanumeric scrolling news service) and through either twisted pair or fiber optic phone lines (phone text).

Teletext is a one-way transmission of information delivered in the vertical blanking interval (VBI) of regular over-the-air television broadcast signals. However, FM radio frequencies, satellite or microwave transmissions and cable are alternative media that can be used for delivery. The teletext information is multiplexed into the VBI at the broadcast's point of origination, and therefore, requires

users to possess a decoder to receive, extract and store the various messages until called up to be viewed on the screen. Due to the limited capacity of the VBI, only a small number of information pages can be offered at one time, and transmission speeds are relatively slow.

Cable text and phone text are better known as viewdata. Viewdata is the two-way, fully interactive, communication system which enables users to access a potentially unlimited number of information pages and a wide range of electronic services. Viewdata services include information retrieval, transactional capabilities, messaging, computing and telemonitoring, all of which require a keyboard or numeric keypad to send request commands for services to the database computer.

It is best to compare the various forms of videotex along a continuum (Talarzyk and Widing, 1982) based on a number of variables (Figure 1):

- frequency of updating necessary

- number of services offered

- database and transmission capacity

- mode of transmission

- speed of transmission

- sophistication of services provided

- system operator control versus user control

- degree of behavior or life style change required

- cost to user, system operator and information provider

- degree of user sophistication required

- degree of hardware and software sophistication

- level of interaction

- system configuration: type of database

- searching technique required

- standards used in display of information

- billing procedures

```
---Frequent Updates------------------------------Limited Updates---

---Limited Pages/High Frequency-------Many Pages/Low Frequency---

---Mass Audience-------------------------------Targeted Audience---

---Summary Information----------------Specialized Information---

---Little Behavior Change---------------Large Behavior Change---

---Low User Cost--------------------------------High User Cost---

---Simple Search--------------------------------Complex Search---

---|----| Teletext |----|----|----|----|----| Viewdata |----|----
Scrolling           Boxing      Keypad    Floppy  System      System
                                Demanded  Storage Dependent Independent
                                                  Keypad      Smart
        Overlay        Full-Channel                           Terminal

                               Touch-Tone          System Dependent
                                                   Dumb/Smart Terminal
```

FIGURE 1. Continuum of Videotex Systems and Variables

(Adapted from Wayne Talarzyk and Robert Widing's, "Introduction
to and Issues with Videotex: Implications for Marketing," p. 6.)

Teletext

Teletext had its beginnings in 1976 with the introduction of the Prestel system by the British Post Office. The British Broadcasting Corporation (BBC) and the Independent Broadcasting Authority (IBA) next developed their respective Ceefax and Oracle teletext systems. Today, many more teletext systems are in existence: Antiope, Keyfax, Telidon, CBS's Extravision, NBC, National Captioning Institute's closed-captioning, Dow Jones, Rueters and Time Inc. to name a few.

Teletext will undoubtedly be the first of the videotex technologies to have an impact within the U.S. marketplace. However, marketers will first have to discover how to use this medium to their advantage. Teletext's basic value will be in providing updates of rapidly changing information to the business sector and to consumers to a lessor degree. The major advantages of teletext are its low operations and equipment costs for both subscribers and system operators. Also, it allows for browsing a'la newspaper reading (which people seem to enjoy) and teletext is easy for users to understand and operate.

It is vitally important for advertisers and businesses
to be knowledgeable about the various types of teletext
available today, as outlined in Figure 1. The lack of an
internationally agreed upon standard means that either the
North American Teletext Broadcast Standard (NATBS) or the
World System Teletext (WST) standard could be used by a
system operator to transmit teletext messages (Danna, 1981;
"Still tugging and pulling on teletext", 1982, Gordon,
1983). There is also a need to be knowledgeable about the
difference between teletext and viewdata. The basic
differences are as follows:

1. Teletext is generally broadcast over air waves on the
Vertical Blanking Interval (VBI), although cable, FM radio,
direct broadcast satellite or multi-point distribution
services can be used.

2. Teletext systems usually have a limited database because
the information is transmitted in cycles, so a large
database would adversely affect response times and the type
of search procedure used (larger means more complex).

3. Database sizes can range from 150 frames for VBI
teletext to around 10,000 for full-channel teletext, while
viewdata databases can range upwards to 100,000 frames or
more.

4. Teletext characters are generally alpha-mosaic, though Telidon, PLP and Antiope use alpha-geometric characters.

5. Information transmitted over a teletext service is of the nature where there are many (greater than 100) simultaneous requests and a need of frequent updating (30 or more times per month).

6. Users cannot gain accesss to a "gateway"--a system-independent database linked to the videotex computer by some communication medium--through a teletext service (Alber, 1982).

Scrolling Teletext

Another name for scrolling teletext is cabletext. Information is continually cycled over and over from the bottom to the top of the display screen, giving viewers about one second to read each line. Viewers have no control over the transmission of information. A full channel is used to transmit and display the information, so there is no need for a decoder to receive this form of teletext. The typical content is news, sports and weather briefs. For many of the cable systems that use scrolling teletext, the

der 7

Cem

a cal

Airecto

clearp

entries'

Their be

repare

is extee

Wi and

The

rely a

Allegat

mere;

steep

Airerc

Riters

Rise

news is more localized in content.

Overlay Teletext

When a viewer wishes to catch up on the news of the day he can flip a switch on his teletext decoder and have information flow across the bottom of the display screen. An example familiar to most everyone would be the "weather watches" that are horizontally scrolled across the TV screen during bad weather. There is no interruption of the regular programming except for the message at the bottom third of the screen. As with scrolling, viewers can only watch the text and not interact.

The potential for overlay teletext usage will most likely be greatest during commercials. Rather than flipping through various channels to find desireable programs while a commercial is broadcast, viewers may opt to catch up on the latest headlines. Again, localized news will probably account for the greatest percentage of content on overlay systems, but there is also a growing need for up to the minute financial information.

Boxing Teletext

Boxing is similar to overlay teletext except that messages are scrolled through a rectangle box which blankets a small portion of the display screen. Again, normal programming is not entirely interrupted. One interesting capability of both boxing and overlay teletext is that the system can be overridden from the headend (open captioning) to allow emergency information to be displayed without viewer commands. Cox Cable Communications offers this service as an option on its security service package. This is a very beneficial attribute for aphasics and the hearing impaired who normally cannot process or hear audio broadcasted warnings or messages.

Closed-captioning, which provides printed dialogue for the hearing impaired, has been the most common use of boxing teletext in the United States. Approximately 55,000 closed-captioning decoders have been placed in service to date and this figure could grow upwards to sixteen million as cable operators become involved in providing the decoders. However, as with other videotex services, the need for costly decoders has slowed the penetration of this

service.

Full-Channel Teletext

Instead of transmitting information in the VBI of a broadcast signal, information can be delivered by phone lines, coaxial cable, direct broadcast satellite or even microwave. One entire channel is dedicated to providing full-channel teletext which means that cable or satellite services will be the primary media used to deliver it. This does present some channel availability problems for both the small cable system operator and subscribers to DBS and STV who have a limited channel capacity.

Keypad demanded, touch-tone and floppy storage teletext are full-channel systems which help to alleviate the problem of a teletext database size and VBI broadcasted teletext. Also, with these types of teletext it becomes possible for the user to store information in their personal computer, or on hard copy via a printer, for use at their own convenience.

Keypad Demanded Teletext

Keypad demanded teletext gives control over information access to the user. A numeric keypad allows users to call up the specific information they desire. Again, a decoder is necessary, and an activated decoder will substitute teletext service for the regular programming or require switching to a specially designated teletext channel. With the increased user control, it is possible for the database to be structured to provide greater amounts of information: news, advertisements, restaurant and entertainment guides, public transportation schedules, shopping and more. Therefore, keypad demanded teletext offers greater utility to subscribers, along with better opportunities for advertisers and public servants.

The depth of coverage of teletext news still does not compare to what is possible with viewdata or newspapers; yet, the expected cost will be better suited to the pocket books of consumers. Another limitation of present systems is the lack of available memory in decoders to store the teletext pages. The end result is that subscribers have to wait for each page to be individually transmitted from the headend rather than having all the requested information

delivered together in digitized packets and available immediately upon request. More memory will mean that information, once requested, can be continually transmitted so that when the user accesses a series of pages he will have the pages waiting in the decoder's memory for immediate display.

Touch-Tone Teletext

Essentially, touch-tone is identical to keypad demanded teletext. The only difference is in the communication link used. Keypad demanded teletext is delivered via cable, while touch-tone is delivered via paired copper telephone lines. However, using a touch-tone phone can prove to be more difficult. For instance, touch-tone teletext requires a phone call to the central database and the inputting of a numeric identification number rather than just switching on the decoder. Also, touch-tone teletext requires a modem (which may be less costly than a decoder) and it will tie-up the home phone line unless an additional line is installed or the telephony equipment can be upgraded to efficiently handle separate voice and data communications on the same line.

Floppy Storage Teletext

When terminal memory capacities are increased it will be possible for teletext information to be sent via satellite or cable to businesses or homes and received, selected and stored on a floppy disk (or even a videocassette) by a pre-programmed intelligent terminal. Information transmitted at 8 Mbits/second would make 30 million pages available per hour, though present storage technology makes storing this much data an impossibility. The intelligent terminal would select and store "key worded" information, such as quotations on certain stock prices or all stories that are about football. Under this system, the subscriber can take advantage of off-hour data transmission rates to make teletext more cost efficient while enjoying the convenience of viewing the pages at his leisure.

One system that is conceptually the same as floppy storage teletext is the Dow Jones & Co.'s "Dow Alert" which sends coded information to radio receivers via satellite. If the information code matches the desired codes inputted into the system by the subscriber, then the data is stored

on a cassette tape to be listened to at the user's convenience. Unfortunately, due to a lack of demand, this service has been terminated.

The Future Market: Teletext

If system operators can overcome the technology's two major shortcomings--costly decoders priced at $100 for built-in decoders to about $200 for set-top decoders (Tydeman, Lipinski, Adler, Nyhan and Zwimpfer, 1982) and a lack of agreement on whether NATBS or WST is best--then it should attract the business sector. Soon after, the mass market will be attracted, making teletext a profitable venture.

Most likely, either keypad demanded or touch-tone systems will emerge as the most visible and profitable types of teletext in the United States. These two systems bridge the gap between expensive viewdata systems and the more primitive scroll, overlay and boxing teletext. Also, at this level of equipment sophistication, it will be possible to offer a service that is significantly better than anything presently available in the way of information

retrieval methods, yet not so complex that a great deal of behavior change or user skill would be required. Moreover, keypad demanded and touch-tone teletext do not require excessive waiting times and the ease of use of these systems will give users control over the service (a psychological victory of man over machine). Also, these systems will probably end up being provided free of charge or on a small monthly charge due to the difficulty of setting up an accounting system for billing. Lastly, teletext advertising revenues should more than cover the relatively small operating costs: equipment maintenance, personnel, rent and utilities (Stokes, 1980; Trahan, 1981).

Advertising on teletext will likely take two general forms: regular and passive. Regular advertising will resemble that of advertisements in magazines only the emphasis will be on informing viewers about the product, its benefits and its uses. Very few consumers can be expected to search out an advertisement unless it can help them in their purchase decision or product usage. The present lack of audio capabilities and poor graphics will hamper an advertiser's attempt to sell or create an image for his product.

Passive advertising will be nothing more than having logos or slogans appear across part of the teletext

display.   This form would be most comparable to outdoor advertising.   Those companies interested in passive advertising will most likely be a sponsor for the specific information pages that are displayed with their logo.   For example, Budweiser might sponsor the sports scoreboard.

Viewdata

For those businesses and consumers who can afford it, and understand the ramifications of fast, convenient information retrieval, transacting, messaging, computing and telemonitoring, viewdata will be the "wonder service" of the future. For now, viewdata's standards, costs, system complexity and problems with human compatibility have retarded this technology's diffusion into our society. Its eventual emergence into society should have a profound impact in the way people interact with other people and institutions. However, any attempt to predict the precise impact viewdata will have upon society at this time would be only useless conjecture.

There are many different variations of viewdata systems already in existence, though they all fall within three general categories: system dependent/keypad (numeric terminal) accessed, system dependent/keyboard (alphanumeric terminal) accessed and system independent/keyboard accessed. Dependency is determined by whether system control is in the hands of the user or the system operator. Within these three categories, systems can differ on

standards, database structure, log-on procedures, search procedures, communication link, storage, processing capability, services offered, the ability to access gateways and cost.

Two-way terminals are necessary for system independent videotex, but can be used with system dependent services too. The two terminals currently used are transponder terminals and transmitter terminals. Transponder terminals act as a receiver where the database computer sends digitally encoded messages to the terminal which are then acted upon as required. The transponder terminal will only send messages upstream to the database when it is instructed to do so by the database computer. Such a system can effectively service a home requiring telemonitoring, and with a contention network accesss scheme, can service information retrieval, transacting, messaging and computing needs very efficiently. A contention network modifies the transponder terminal and gives users control over sending data upstream at their own convenience.

Transmitter terminals are made up of a few digital chips which continuously send messages to the database computer. Obviously, such an arrangement limits these terminals to cable system use unless every home can be wired with a dedicated phone line. The database computer must be

able to receive, store and act upon the data from every subscriber simultaneously. While a transmitter terminal requires greater spectrum space than a transponder terminal (approximately twice the space), it is cheaper and less susceptible to jamming and signal ingress on cable systems.

The major difference between viewdata and teletext systems is that teletext is "polled" every few seconds and still basically a one-way service, while viewdata is on-line in a dedicated communication link with the database computer. The QUBE system, owned and operated by Warner Amex Cable Communications, is considered to be a viewdata system although user responses are polled. Viewdata is considered to be two-way interactive communication; it is possible to accomplish information retrieval, transactions, messaging, computing and telemonitoring over viewdata systems. Teletext (and systems designed like QUBE) are essentially one-way interactive communication where users can retrieve information or accomplish transactions requiring only a numeric input. Telemonitoring may also be available if cable is the communication link used.

System Dependent/Keypad Accessed

An RS-232C modem or a decoder is necessary to enable communication between the user and the database for viewdata. The user either dials up the database with a touch-tone telephone or switches on his addressable decoder to gain access onto the system. Once on-line, the user will need to answer a series of questions designed to guide him to his desired information. A numeric keypad or a touch-tone telephone is necessary to respond to the questions. The ultimate control of a system dependent/keypad accessed service is with the system operator--the user is confined to answering the displayed questions. The search procedure is similar to that used by banks in their automatic teller machines (e.g. menu driven).

The major problem with keypad accessed viewdata is the time consuming and high error potential of the search procedures used. Subscribers could be required to answer up to 15 questions and spend over one minute just to access one piece of data. However, technological advances can be expected to alleviate this problem as it has for other more sophisticated videotex systems.

These systems are both simple to understand and use, while being relatively inexpensive. It could be possible that this type of system will be the most appropriate viewdata system to introduce given the current level of computing sophistication in the United States.

System Dependent/Keyboard Accessed

The problem of long access times is improved upon by a keyboard accessed system. Usually, a dumb terminal (one with little or no storage or processing capabilities) is used to input alphanumeric commands, though an intelligent terminal can also be used. The current growth in personal computer sales would indicate that intelligent terminals will be the dominant terminal used in keyboard accessed videotex systems.

A modem or decoder is also required for access to a system dependent videotex service. However, the alphanumeric keyboard allows for keyword searching (see Database Arrangement) which can eliminate much of the search task.

System Independent/Keyboard Accessed

This type of system requires users to own or rent a personal computer, or some type of intelligent terminal with a fair amount of memory--at least 4K to be practical, but 40K for geometric displays. A high-resolution monitor is also necessary. The services that can be provided to subscribers at this level of equipment sophistication are almost endless. By using micro-computers with greater memory; user storage, programming and computational capabilities can be enhanced. However, due to interface problems, users of system independent viewdata cannot expect to be able to access system dependent services. The Source and CompuServe are two presently available timesharing services who sell access to their mainframe computers and seemingly endless database of information and services. These two companies, plus iNet (See Videotex System Organization) and Times Mirror Videotex Services' "Gateway" test, are the ultimate in videotex systems to date.

The Future Market: Viewdata

Viewdata should grow like the other communication innovations that have evolved into useful products and services today (Utterback, 1974). However, it will be many years before viewdata will gain the sufficient penetration necessary to be taken seriously as a viable medium.

The major obstacles to be hurdled are cost and a lack of consumer confidence in computer related technologies. Yet, both of these problems can be overcome in the short-run. Once hardware manufacturers have an agreed upon standard to build their equipment, the U.S. will see an increasing penetration of terminals on-line with videotex databases and an increase in the amount of software produced to enhance viewdata services. The formula for greater consumer and business acceptance is: a set standard + compatible hardware + useful software + increased equipment production + lower equipment costs + advertising underwriting costs + lower service costs.

Also required will be the active participation of information providers (IP's) in marketing their information to customers. IP's include advertisers, news services,

newsletters, magazines and any other business that can sell their product or service via an electronic media. Participation by IP's cannot be passive, as in Britain; but, instead IP's must inform customers what information is available through advertising in other media.

Information on viewdata can be on just about anything, as can the services provided, from advertising to transportation schedules to financial newsletters to the placing of gambling bets. However, consumers will dictate which information and services survive, and if a consumer is unaware of its availability, then he will not seek out the information or service. It must also be remembered that consumers will have to change their behavior patterns in order to accept viewdata--a task that cannot be underrated-- and it is the IP's who have the best chance to initiate this change by providing innovative and useful services.

Offering a worthy and valuable service that is not a "me too" service is the only way to gain consumer acceptance for a product that does require a change in behavior. Of course, it would be helpful if more data was available on user demographics and psychographics so IP's could get a better understanding for the target market of viewdata. However, privacy laws and various other federal and state regulations will likely limit the amount of user information

that can be collected. Trial and error will be the likely way operators and IP's discover which services consumers will want and pay for.

Videotex Standards

Unlike the European videotex industry where governments have dictated the standards, the United States government has had very little influence on the U.S. videotex market so far. The government has left the evolution of this technology to the marketplace. The result has been the cautious development of videotex systems; manufacturers and system operators have all been reluctant to make a major commitment because of the possibility that their investment could be negated by the establishment of a divergent standard. Therefore, there is a need in the U.S. for interface compatible equipment and for a method that allows access to "outside" databases while assuring data security. Moreover, it would be helpful if systems were made compatible with both home computers and television sets in order to reach a greater percentage of households.

The underlying purpose of setting standards is to instill confidence in the technology for everyone involved. Manufacturers can produce equipment without fear of instant obsolescence; system operators can construct their systems and know their investment will not be lost overnight;

consumers can purchase hardware with the knowledge that their equipment will interface with all databases; and information providers can safely input their information knowing that users throughout the country have the ability to access it. The standard that is set will influence the availability and quality of services, the cost of equipment, the complexity of a system and the compatibility of various equipment and systems. So, the selection of standards is an important step in the evolution of videotex. Unfortunately, consumers will have very little say in what system is developed in their community.

The major organizations involved in setting the international videotex standards have been the International Organization for Standards (ISO) and the International Telegraph and Telephone Consultative Committee (CCITT). Standards were needed for both intrasystem (system interface components) and intersystem (interface between systems) networks. Some of the objectives set by the ISO and the CCITT were as follows:[1]

----

1. Bloom, L.R., A.G. Hanson, R.F. Linfield, and D.R. Wortendyke, "VIDEOTEX Systems and Services," Report 80-50 from the National Telecommunications and Information Administration, October 1980, p. 126.

-   Compatibility of consumer terminal equipment for interactive and broadcast videotex.

-   Acceptable quality of display reproduction.

-   Economical purchase and installation charges.

-   International network capabilities (intelligent gateways-protocols, easily interchangeable codes, data packets and software).

-   Interconnectible features.

-   Greater utilization of information services by users.

-   Acceptable frame formats.

-   625/525-raster-line conversion (to make European and American television compatible).

-   Terminal identification for billing purposes.

The American National Standards Institute (ANSI) and the ISO developed the "Reference Model for Open Systems Interconnection", which consists of seven independent layers that make up a framework for system standards. Layers 1-4

refer to transmission standards and are transparent to users, layers 5 and 6 refer to user dialogue and layer 7 defines the applications of the information service. The layers and the area of concern for each are as follows:

1. Physical Layer:
   functional, mechanical, electrical and procedural characteristics needed to establish, maintain and release physical communications between systems (RS-232C).

2. Data Link Layer:
   functional and procedural means to establish, maintain and release data links in a network.

3. Network Layer:
   functional and procedural means to exchange data between systems.

4. Transport Layer:
   for transfer of data between two systems, network used, routing algorithm and data flow procedures.

5. Session Layer:
   procedures for log-on, user identification, billing and statistical gathering.

6. Presentation Layer:
   to provide services to be selected in Layer 7 that help the meaning of exchanged data: management of entry, exchange, display and control structure (usable characters, text, graphic coding scheme and attribute coding).

7. Application Layer:
   defines the information service itself and how to serve the end user (retrieval and access methods).

The European Conference of Postal and Telecommunications Authority (CEPT) have set the European standard for videotex to accommodate the British, French and German videotex needs. Essentially, this standard (mosaic) allows for the manufacturing of low-cost decoders at the expense of text and graphic display quality.

The standard set in North America is known as Presentation Level Protocol (PLP). This standard is for a geometric system and employs a coding scheme that is independent of the required hardware making it practically obsolescent resistant. PLP allows for the alphanumeric and graphic generation of pages automatically from statistical data. PLP can be upgraded from low-resolution to a high-resolution system without modifying the format of existing information in the database; such is not the case with CEPT. Also, PLP does not require additional page preparation time even though greater detail can be accomplished. The mechanics of PLP are:[2]

- Specific coding defines rules, procedures and formats for text, graphics and control information.

- The coding scheme is based on CCITT F.300 (known as

----

2. Berkman, Sam, "A PLP Tutorial," paper presented at Videotex '82 in New York, June 28, 1982, pp. 7-8.

"Videotex Service", describes the standard parameters for a public videotex service) and S.100 (known as "International Information Exchange for International Videotex", defines the characteristics of coded information and display formats) recommendations. Both S.100 and F.300 recognize Prestel's serial coded alphamosaics, Antiope's parallel coded alphamosaics and Telidon's parallel coded alphageometrics.

- PLP can accommodate both 7-bit and 8-bit environments.

- ASCII (American Standard Code for Information Interchange) alphanumerics is provided for (digitally coded: the letter A = 65 or an ASCII value of 1000001).

- A set of supplementary graphic characters is available.

- Dynamically Redefinable Character Sets (DRCS) are available for the encoding of text.

- Mosaic graphics can be created.

- Geometric graphic primitives are compatible with Picture Description Instructions (PDI).

Additional PLP capabilities include:

- Color mapping.

- Controllable stroke width.

- Continuous test scaling.

- Unprotected fields (for use with electronic order forms).

- Programmable texture masks.

- Macro PDI's (the definition of objects containing a set code which allows one to call on the macro, saving transmission time and cost).

- Transit macro (code of a figure is transmitted, given a macro name and then stored as a macro so that the figure can be used again and again by only transmitting the macro name).

Coding Schemes

The five display technologies are alphamosaic,

alphageometric, dynamically redefinable character sets, picture description instructions and alphaphotographic (K. Clarke, 1982; Larratt, 1982). The differences between various videotex systems exist due to the codes used for transmission and the method used in information display by these technologies.

Alphamosaic coding divides the display screen into rectangles. Systems in the U.S. use between 640 and 800 rectangles (Alber, 1982). Each rectangle can then be subdivided into 10-by-8 dot matrices (Figure 2). If the matrix is allocated a character, then a 7-by-5 grid creates the character pattern, while a 3-by-2 grid creates requested graphic patterns. The unused grids are left blank to enhance readability. Images and words can be formed by arranging the matrices in a logical pattern.

Alphamosaic videotex is considered to be the first generation of the display technology. The resolution is low, 72-by-80 pixels (picture elements), which accounts for the poor quality of mosaic graphics. However, user terminals require only 1K of memory to receive, store and transmit to the display screen alphamosaics, and therefore, are the least expensive terminals that can be used. Transmission of alphamosaics only require voiceband capacity (usually at 300 bits per second, but it can be up to 1200
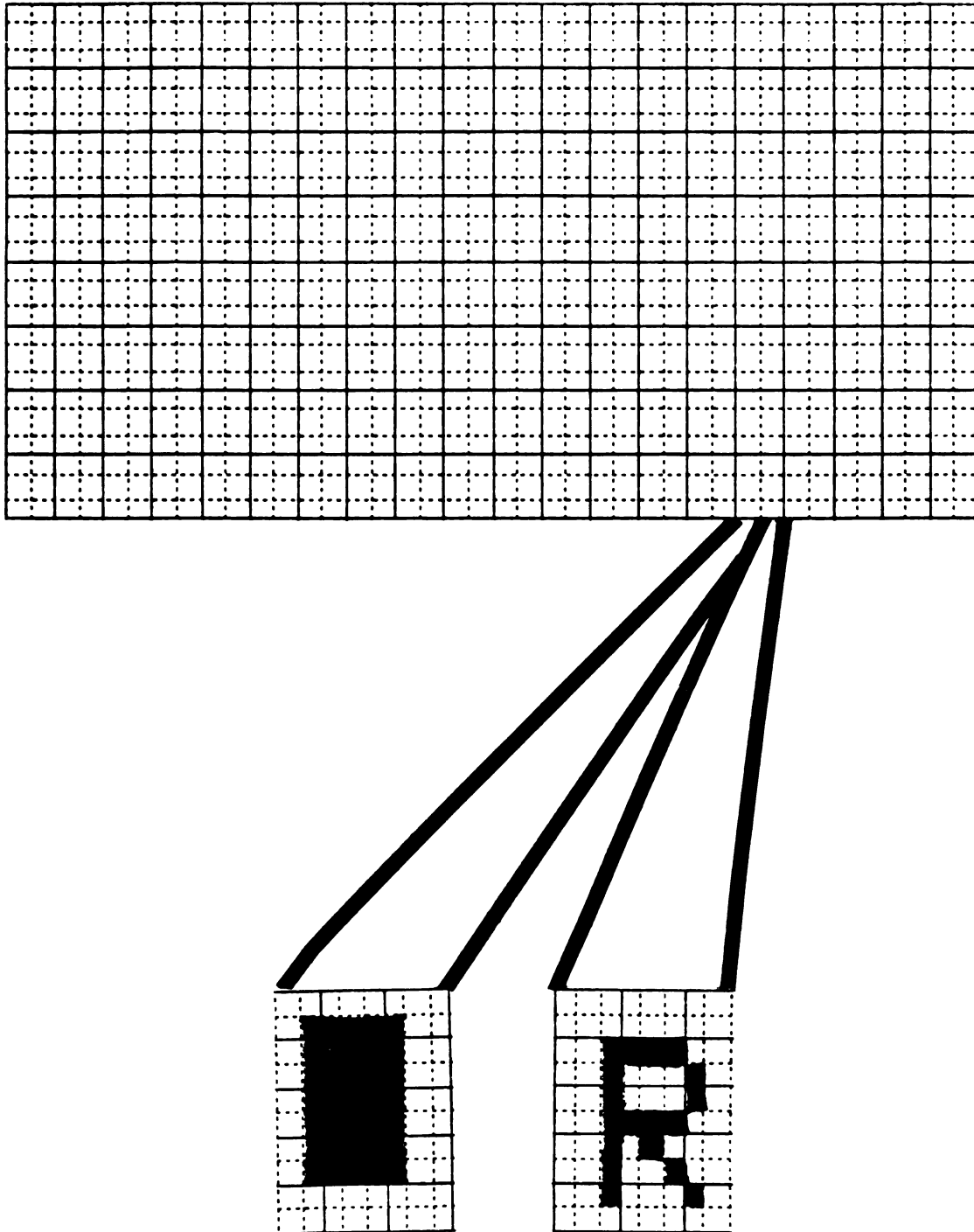
FIGURE 2 Representative Alphamosaic Screen and Grid

bps).

Alphamosaic pages are stored in the database computer in the exact makeup as they will appear on a display screen and are transmitted synchronously in bit-serial form. Each byte of information contains an address code which corresponds with a particular character location in the ROM of the terminal and likewise on the display screen.

Serial attributes, which require synchronous transmission (set position for each transmitted character on the monitor), have the attribute code--the control information, such as color and flashing characters--multiplexed in the ROM with the display characteristics and is sent in sequential order to the display screen. Since each byte corresponds to a matrix position on the screen, a space will appear on the screen every time an attribute code is encountered. While the space created may not appear as a blank mark on the screen, this limitation reduces the flexibility of graphic creations. For instance, this problem makes changing the color of every other matrix, graphic or text, impractical. Suffice it to say, there are ways to overcome this problem which are beyond the scope of this thesis. The advantage of serial attributes is that the attributes of many characters can be changed simultaneously by a single byte code. The

same advantage does not hold true for parallel attributes.

Parallel attributes are 8-bit codes which are stored with another 8-bit display character, making a total of 16 bits used to define the makeup of each matrix. All 16 bits are addressed simultaneously so that attribute definition does not interfere with the character display and cause a blank space on the screen. Parallel attributes are transmitted asynchronously (data is continuously transmitted, but there is no set relationship between characters and their position on the monitor), which not only increases future flexibility, but also reduces the error rate. Two disadvantages of parallel attributes in U.S. systems are that 2K of memory is needed (though with the low cost of memory today this is hardly a problem) and that it is not usually possible to change a parallel attribute simply by transmitting another 16 bit code to a matrix location. This can lead to problems in the creation and updating of pages.

Alphageometric display is the second generation of videotex technology. Resolution of geometric text and graphic figures is increased to 240-by-320 pixels, or about one-fifth the resolution of a television picture, and conforms to the ASCII 7-bit code, along with ISO code 646-1973(E) and its extension ISO 2022. The two ISO codes

call for a 20 x 40 display format that uses 128 control, graphic and text characters to define letters, digits and symbols (Lax and Olsen, 1983). The code is broken down in the control set, which is composed of 32 codes (backspace, inquiry, transmission control, etc.), and the graphic set of 96 codes. The graphic set is then subdivided into three separate character sets: the G0 set handles basic English and Roman characters and numerics, G1 is used to compose simple graphic displays and G2 adds additional symbols necessary for the proper display of French and German languages.

Geometric graphical information is encoded and then transmitted in a cartesian form which breaks down the screen on a dot-by-dot basis. The Telidon system introduced this technology, calling it "bit plane memory". This type of transmission negates the need for a character generator in the decoder, but the trade-off is that about 40K of memory is necessary to fill a screen with information.

There are three advantages alphageometric coding holds over alphamosaic coding. For one, pictures are defined much better and the haziness associated with mosaic graphics is eliminated. Also, alphageometric terminals have a considerable degree of system independence, meaning that a system can be upgraded without making the user terminals

obsolete. Lastly, alphageometric coding reduces the number of bits needed to be transmitted and stored, which in turn reduces user costs.

However, there are also three basic disadvantages of using an alphageometric coding scheme rather than alphamosaic. First, the extra memory required will increase user costs, though the continuing decline in memory costs reduces the effect of this problem. Secondly, editors (IP's) need a local dedicated computer to insert and update information, while editors on a mosaic system only need a keyboard. Also, the software routines for an alphageometric system are more complex and time consuming to install, plus the transmission rate of data usually exceeds the processing rate of presently available user terminals. User terminals must be able to stop transmissions periodically until it can process the information it has already received.

The next level of technology is dynamically redefinable character sets (DRCS) which increase the amount of graphic figures a system has for frame creation. Instead of relying on greater ROM to increase the memory storage capacity, bits of information that define additional characters are downloaded into the decoder or terminal's random access memory (RAM). The DRCS can be used to create special alphabets, mathematical symbols or foreign languages and

essentially is a secondary character generator ROM. So, when a page is ready to be transmitted, standard characters from ROM and special characters from RAM are used to reconstruct the page on the display screen.

Much like DRCS, picture description instructions (PDI) are downloaded and stored in the videotex decoder or terminal which make it possible to create complex graphics with relative ease. Picture description instructions can deliver higher resolutions (up to 1024 x 1024 pixels) with additional memory. Each PDI is known as an opcode and is a one byte code. The seven basic PDI commands are a point, line, arc, rectangle, polygon, bit (this draws figures point by point similar to facsimile machines) and control (this gives control over the mode of creation commands). The first five commands are for alphageometric graphics and allow for the creation of figures by connecting a set of points charted on the screen. "Bit" and "control" commands are used in alphaphotographic videotex.

The transmission of alphaphotographic videotex includes both text and still video frames. Presently, photographic quality information is transmitted at 2.4 to 4.8 Kbps and will build up a picture 1/9 the size of the display screen in 15 to 60 seconds. At transmissions of 64 Kbps, a slow scan picture 1/4 the screen size could be accessed as

quickly as one second and displayed within eleven seconds. To create the picture, pixels are assigned one of sixteen brightness levels which correspond to a voltage level that will control the video display. Pixels are then sent to the display screen on a point by point basis.

The two main alphaphotographic systems under evaluation presently are Japan's CAPTAIN and Britain's Picture Prestel. CAPTAIN is the most interesting system because it has been designed to be used with a character generator as well as transmitting photographic quality pictures. In fact, input of characters, mosaic symbols, photographs and hand-drawn pictures into the system are accomplished by using an ITV camera in a process similar to that used by facsimile machines. Unfortunately, little information is available on the CAPTAIN experiment.

The three difficulties to be overcome with alphaphotographic videotex are with the long transmission time needed to create an image, the large amount of memory needed to store an image and the high costs involved. A user terminal needs a special interface control card to access an alphaphotographic videotex system (costing from $50 to $100), a microprocessor with at least 48K of memory and a picture storage capability of 24 Kbyte (8 Kbyte for chrominance and 16 Kbyte for luminance), on top of a high

priced access charge.

The transmission times required will be significantly reduced with the onset of more sophisticated data compression techniques. An alphaphotographic videotex system transmitting at 64 Kbps cannot use a voiceband transmission service, but requires a wideband service such as cable, satellite or fiber optic phone lines. The present technology of slow scan picture generation can be sent at slower speeds--taking up to eight individual picture pages to compose a recognizable picture-quality photograph--unfortunately the access times are too long to be compatible with American patience levels.

Without a doubt, alphaphotographic videotex, when it becomes a cost effective medium, will become the direct marketing sales device advertisers are looking for to sell their products and which consumers will pay for to do home shopping. For most Americans, nothing short of photographic pictures of merchandise will do for electronic shopping, especially on the higher priced products that should proliferate videotex marketing in the beginning. The same feeling will hold true for most advertisers, as we will see later.

Videotex System Organization

While understanding the technology of videotex is important, it is equally as important to know how a system is organized, what the needs of the various people involved are and how videotex is linked to the end users. This section will briefly look at the different types of databases in existence, along with the type of search procedures and communication links available. Also, brief discussions will be given to information provider and user terminals needs.

Essentially, there are four separate entities to be concerned with in regards to videotex system organization. There is the system operator who is concerned with the basic system design, operation and functions. Information providers are interested in data management: how they can create and input their information, edit and update it, how billing procedures are handled and the costs incurred. The network provider is concerned with the physical communication link between the database and the end user: the speed of transmission required, problems with system blocking, ease of access and the costs of equipment and

services. Then there is the end user himself, who will evaluate the utility of a videotex system based on cost, system capability-terminal requirements, mode of access and search, the complexity of services and overall system characteristics and benefits.

In designing a videotex system, the operator must consider each of the above mentioned concerns. The fundamental objectives every system should consider include the following:

- 24 hour, seven day a week operation.

- Updating to be accomplished on-line.

- No need for database reorganization--a little planning can prevent a lot of future headaches--so considerations must be made for future enhancements like audio capability, speech recognition, key word searching, downloading of programs and photographic editing routines.

- Billing procedures, accounting and system maintenance must be accomplished on-line.

- Sophisticated diagnostic and automated defense mechanisms are needed to eliminate malfunctions--this

includes a backup system and reserve power supplies to keep the system on-line under any emergency.

- Minimum system operator involvement, meaning that the system is relatively transparent to the user and the information providers.

- "Help" facilities to assist the beginning user who is not familiar with computers and databases.

- Maximum system security, both on-line and in the user data collected.

- System design independent of the technology so that equipment obsolescents is not a problem.

- Maximum terminal computing power to reduce the amount of data needed to be transmitted.

The are two types of network configurations used in designing a videotex system: a replicated (or distributed) database and an open-system with gateways. The European systems favor the replicated database, like Prestel's Advanced Network Design Architecture (PANDA). Under this approach, system control is locally oriented. For instance, each town would have its own local information center (for

inputting and updating of information) and local user center which are linked to user terminals through a public switch network and a local administration center to handle billing and accounting. All information that has a high frequency of access is stored in the local information center, while less frequently accessed information can be accessed through a centrally located database center. This type of arrangement is a compromise between a teletext system and a viewdata system. Local databases can keep storage capacity and wait times at a minimum, while providing the most requested information, yet it allows users to access a potentially unlimited database. Of course, accessing information that is not locally stored will significantly increase user cost and wait times.

In the U.S., an open-system with gateways will be used. The major reasons why this type of system will be built are that Americans are expected to want to be able to access the myriad of gateway services that should develop and because of the lack of an agreed upon standard. Also, an open-system makes it possible for both public and private gateway services to operate and interact with each other. The major advantage of an open-system is that it is not necessary to replicate identical data in every database. Instead, gateways--which will be transparent to users--can be independently accessed, depending on the type of

information desired.

In an open-system with gateways, a series of locally, regionally and nationally distributed database services will be interconnected. Billing will probably be based on gateway service usage, plus a set monthly charge. However, by relying on gateways to provide data without a set videotex standard, it will be necessary for a method of interfacing incompatible equipment to be found. This can be accomplished through developing software which can convert various interface protocols into a code that any database computer can understand and therefore, should not be a limiting factor in the evolution of videotex.

Also, by using gateways, low penetration will not be as large a problem as it would be for replicated networks. It would be possible for every videotex subscriber to access any given gateway service, which at a low penetration of only 2% still would mean a potential market of 4.5 million people. Moreover, in the introductory stage of videotex, this market will consist of the upper income market at which most IP's want to target their information. The end result will most likely be a plethora of videotex services available, some useful and some not--similar to the current personal computer software market.

One experimental system that incorporates an open-system videotex service is the Computer Communications Group of the TransCanada Telephone System's "Intelligent Network", better known as iNet. This field test has 400 Telidon terminals (including 125 Telidon-compatible Displayphones) placed in various businesses in Canada which are linked together by Datapac CCG's public packet switched network (Gwen Edwards, 1982; Farrell, 1982). The videotex services offered are tailored to the specific needs of the businesses using the system.

For each user, iNet sets up an account which allows for immediate access to any on-line gateway and IP's service. Billing is accomplished in a single monthly bill. Also, both user-to-user and user-to-host messaging is possible, even between incompatible terminals if necessary. Furthermore, there is no language barrier on iNet because the system is user friendly in English and French. The user only needs to sign on, input his identification number and then access one of four directories. The directories include a personal directory (e.g. messages, calendar, phone numbers), a user/corporate directory (e.g. corporate information and services), a public directory listing all the nationally available information and services and a regional directory listing region specific information and services.

Figure 3 is a schematic drawing of a generic videotex system configuration from information provider to the database and the end user. The system can fit the definition of both a replicated network and of an open-system network. However, the key features that are documented within the figure are:

1. The local database is the central link between the gateway services and the user. Whether the local database is a cable operator, the telephone company or an independent company, it will be the center of communication. The national database represents either a gateway service or an information holding service for infrequently accessed data and services.

2. IP's can input their information at either the local or national level. This convenience will appease local retailers who will want to distribute their messages in a specific area and regional and national marketers who do not want to have to input their information into every local database. Plus, this allows for videotex markets to be segmented very narrowly if desired.

3. The transmission vehicle used can be either cable, phone lines or over-the-air. Also, a system could
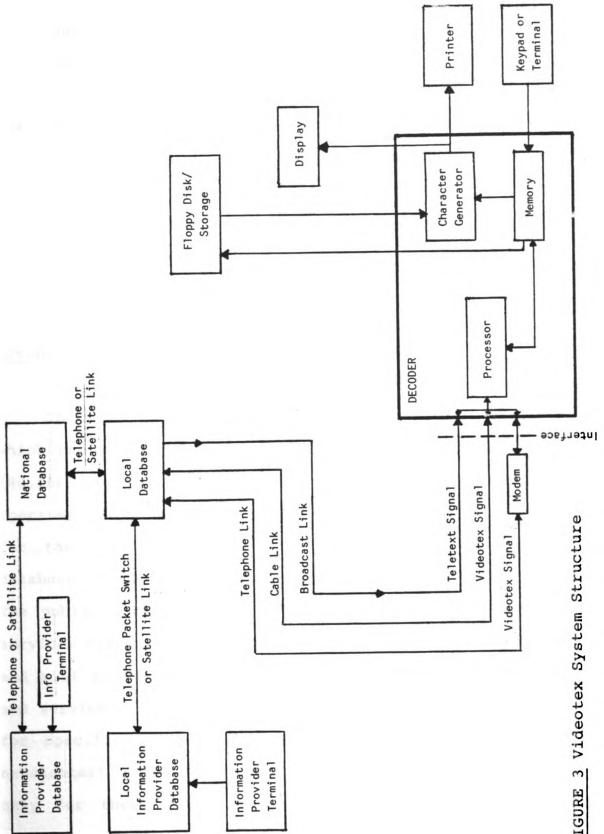
FIGURE 3 Videotex System Structure

easily provide both a teletext service and a viewdata service together to better serve the users specific needs.

4. The videotex user will need either a decoder or a terminal to receive, process, store and retransmit data to a display or printer. The device must also have the capability of sending commands or information upstream to the database computer.

Database Arrangement

There are three classes of videotex database services, which can use either a micro or minicomputer if less than 180,000 pages are needed, a front-end minicomputer that operates off a mainframe computer or a mainframe computer for the largest of systems. One service is a public database which everyone can access and communicate with. The public databases will offer all of the basic videotex services through either gateways or locally stored services and will be the main source of distribution for IP's data and services. A closed user group database service will be for specific users (e.g. a subscriber-based stock market newsletter) and will contain proprietary information meant only for those users given access, much like cable pay

services today. The third database class is an in-house database situated within a company. This type of service can either be set up as a local area network or similar to a closed user group.

The major service a local database provides is a single point of access for videotex users. Through this connection, gateway services are but a few commands away. The user needs to remember only one set of connection commands and one identification number, plus they must become familiar with one search method. Also, billing for all services accessed is consolidated into one bill; a worthwhile convenience in itself. The problems to be overcome are with standardizing gateway services so that each uses the same display technologies and search procedures, controlling the logistics of updating services and directories and standardizing billing charges and procedures.

To input information into a videotex system, IP's will need a terminal compatible with the database's computer. These terminals can be quite costly (up to $20,000 per unit) but are necessary to give the IP's the frame creation control they desire. The basic functions and capabilities of the Telidon IP terminal are as follows:

Graphic Editing

- Eight colors, six shades of grey and flashing white.

- 360 degree rotation in any direction.

- Image scaling from .01x to 100x the original size.

- Image reflection.

- Text and graphic animation.

- Motion.

- Grid overlay.

- Overlays and overwriting.

- Repositioning of objects.

- Sequence changing.

- Timing control.

- Windowing--to zoom in on a portion of the page.

- Deleting specified objects.

- Changing colors.

Word Processing

- Adding and deleting of blocks of text.

- Moving text.

- Overwriting characters.

Format Commands

- Right and/or left justification.

- Page   size   and   line   length specifications.

- Spacing of text.

- Indentation.

- Embedding and appending of other text files.

- Changing text color.

- Specifying background color.

- Merging of text and graphics on a page.

The Telidon terminal is probably the most advanced graphic equipment available for creating videotex pages. With this terminal, an IP can design and create approximately five pages per hour. Creation times are reduced by a bulk formatting process which calls up previously created pages that are similar to the desired layouts and then allows for individualization of the page.

The type of database computer used will influence the storage technology used. For videotex, hard disc storage is preferred to floppy disk because of the faster accesss times

possible, the better transmission rates achieved and the higher storage capacity. When the cost of magnetic bubble memory is reduced, it will be a better storage medium than hard disk due to its ability to withstand extremes in temperatures, vibration, dust and humidity. Videodiscs are another likely storage medium in a videotex database, especially for permanent information, and can store up to 1000 frames of information. Sears Roebuck & Co. have already experimented using videodiscs for distributing their catalog data to consumers. However, future advancements in memory technology could make the present secondary storage technologies obsolete.

Also, the storage technology used will depend on the type of information stored. There are three parameters to be used besides the above mentioned: specificity of information (specific to general), volume of information and frequency of updating required. System operators should not neglect the need for audio storage (e.g. voice messaging or audio enhanced videotex).

Storage and transmission media will greatly influence access times, which is an important concern of users. The time it takes to access the desired information is dependent on the number of lines dedicated to providing information, the digital bit rate of transmission, the amount of decoder

memory and the search procedure used. The three methods of search, in reverse order of sophistication, are the tree process, direct retrieval and keywording.

The tree process, also known as a hierarchical approach, requires the user to answer a series of questions designed to lead him to his desired information. Unfortunately, it can take ten or more questions to arrive at the desired page and if another page is wanted the user has to go through the entire search procedure again. Figure 4 shows how a user would search for classifieds about cockapoos. A directory would inform the user that pet information began on page 20, and once accessed, page 20 becomes the beginning branch of a pet file. In this case, the user responds with alphanumeric commands to listings given by the database computer until page 201A44 is displayed. As Figure 5 shows, this hierarchical search can be numeric or alphabetic, depending on the database.

Direct retrieval search requires a database guide that lists page numbers of specific information. The user consults the guide for the page number of the specific area of information wanted and enters that number. For example, our dog lover in Figure 4 would input #201A to get the listing of dogs. From there, the tree method would locate the listings on cockapoos. This method will reduce the

PAGE 18

PAGE 19

PAGE 20
Index
"PETS"

0 = Donkeys
1 = Cats
1A = Dogs

1 2 3 4 5 6 7 8 9

1A

0

PAGE 200

PAGE 201A

0 1 2 3

5

4

0 = Doberman
1 = German Shepard
2 = Airedales
3 = Collies
4 = Cockapoo

PAGE 201A4

0 1 2 3

4

0 = 50% each
1 = 25% Poodle / 75% Cocker Spaniel
2 = 25% Cocker Spaniel / 75% Poodle
3 = Deaf and Blind in Right Eye
4 = General Listing of all Cockapoos

PAGE 201A44

Classified Ads for
General Listing of
All Cockapoos

FIGURE 4 Numeric Indexing for Menu Search

61
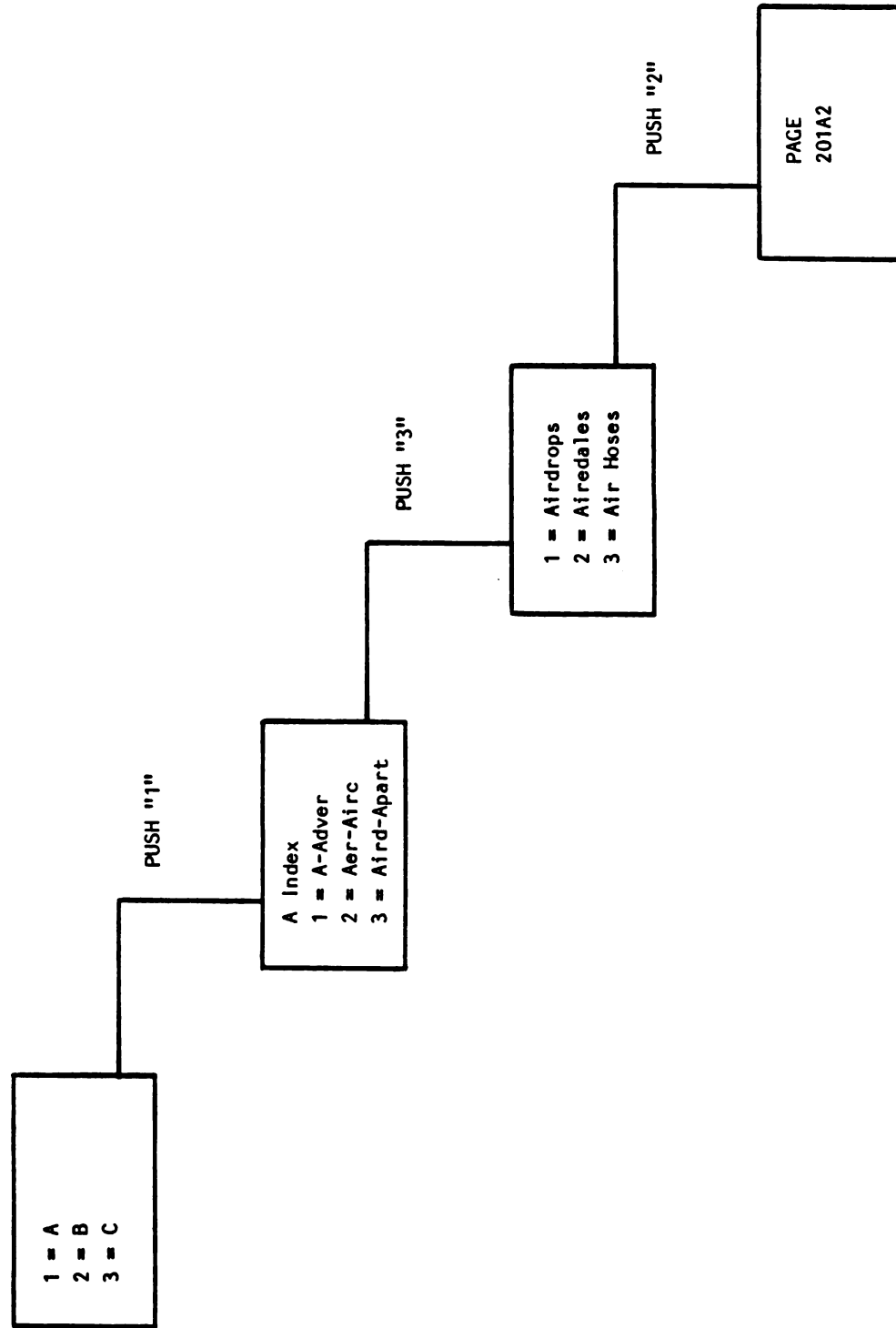
FIGURE 5 Alphabetic Indexing for Menu Search

search time once users become familiar with the guide. Direct retrieval also eliminates the need for users to begin the search procedure again for each different page of information desired. Instead, inputting another page number will access another page in a different branch of the database--this can be helpful for users wanting to compare information. However, it is difficult to keep an updated guide for the users to reference unless the guide is electronic, which would then make the search procedure like the tree procedure.

The third search procedure, key wording, requires the most sophisticated computer equipment at the database and for the user. However, key word search is the most efficient procedure once users become familiar with the "key" words. Once on-line, our dog lover would input "cockapoo" and have the classified listing appear within a few seconds: no questions, no waiting. The major problem associated with key wording is that different gateway databases may set up their "key" words differently.

A fourth search procedure suited for databases storing personal directories is a relational service made up of files having the same structure. The records stored in each file are related through common fields (matching records), but this system's structure is transparent to the user.

Basically, data is stored in interrelated tables and switching between the tables can be accomplished by a single command.

The major question to be answered in regards to databases is how billing will be accomplished and what will be the exact costs. To date, most of the videotex experiments have been held at no cost to the users or the IP's, so the cost structure is still up in the air. European systems charge a fee for renting a decoder or modem, a per access charge, a charge for connect time, a charge for the communication link usage and sometimes an extra charge for special pages. Obviously, charges will have to be consolidated into one billing for users in the United States.

The Communication Link

As Figure 3 showed, there are two communication networks involved in bringing videotex into the office and home (local and national). In the local distribution of information, the communication link can be coaxial cable, the telephone company's local loop or over-the-air broadcast

signals. To link the gateway services, either satellite (or microwave in some cases) or telephone long lines will be utilized. In the future, fiber optics could be the medium used to handle both local and medium distance communication links, though satellites will be used for long distance communications.

In selecting the appropriate network four variables must be considered: service penetration, transmission speed necessary, decoder or modem cost and the cost of the communication link itself. Again, it must be noted that fiber optics will be the optimal medium in the near future because of its transmission speeds (10 Mbps), system security, bandwidth (enough to handle video requests along with voice and data), immunity to external interference and expected lower cost compared to copper pair cable (Toth, Wong and Strudwick, 1981; Popovics, 1982).

However, the present cost of fiber optics limits its potential use, especially considering that some 98% of all homes in the U.S. are already linked by copper pair telephone lines or broadcast signals. Until videotex becomes a proven medium requiring greater network capacity, operators are not going to spend mega-dollars rewiring every home. This is doubly true for AT&T who lost hundreds of millions of dollars on its ill-fated Picturephone.

Teletext signals will enter the home by way of either over-the-air transmission or through cable. The three significant communication networks that will carry viewdata services into the 1990's are cable, switched telephone networks and packet switched networks. The remainder of this section will focus on these three communication links.

As of May 1983, cable penetration was over 37%, yet only about 1% of U.S. homes have two-way capability via cable. However, with proposed two-way systems in Chicago, Detroit, Philadelphia, Houston, San Diego, New Orleans and other major cities, this penetration figure is sure to grow significantly by the end of 1985.

There are two methods for distributing two-way services over cable lines. One way consists of laying two separate cables, one for downstream transmissions and one for upstream transmissions. While this method is very simple, it is not totally cost efficient. The second way is to use a single coaxial cable, but to use frequency division multiplexing for upstream and downstream channels. Generally, frequencies ranging between 5 and 35 mHz are reserved for upstream transmission, while frequencies above 50 mHz are reserved for downstream video, audio and data transmissions. Frequency division multiplexing requires

users to have a transponder type terminal. For transmitter terminals, area division multiplexing is used to separate the various channels.

With 400 mHz in channel capacity in cable (and 500 mHz on the way), there are plenty of available channels to dedicate to videotex services. This is even more important in institutional (business communication) cable networks, which could be the major profit maker for cable systems built in metropolitan areas. The problem lies in user cost for terminals and in system control over signal reception authorization. The answer may be addressable converters and personal computers. The cost for addressable converters is still steep, but signal control can be held at the head end. The videotex signal can be scrambled and coded (addressed) at the head end so that only the addressed home decoder can unscramble the signal. Addressable systems seem to be the most accepted way to tier videotex services on a cable system. When the quantity of addressable converters produced can be increased, prices will drop from its present $125 to $180 range.

Gateway services can be sent to the local cable operator via satellite feeds or over long distance phone lines, so the open-system with gateways is a viable system design for two-way cable services. Knight-Ridder, in its

Viewtron experiment, rejected using cable for its videotex system on the grounds that two-way cable penetration was too low. While Knight-Ridder may have missed counting on chickens that are not going to hatch until the late 1980's, their telephone based videotex system is the only U.S. videotex test to become operational.

Viewtron relies on the local phone loop, a paired copper cable communication link also known as a circuit-switched network. The interconnection between points is held for the entirety of a call, even if no information is being transmitted. At present, this medium is more than adequate for the amount of transmissions it has to handle. And it is possible that once Western Electric perfects its Experimental Digital Switch (XDS), paired copper wire will be able to handle all videotex transmissions until fiber optics replace it sometime around the end of this century (Bergland, 1982). The major problems associated with local loop analog-switched networks are its limited bandwidth and slow transmission speed (theoretically set at 20 to 30 kbps maximum with multiplexing advancements considered). By digitizing telephone transmissions, both the costs and the potential of system blocking can be significantly reduced. However, video transmission would still not be possible and digital switches are expected to be used only with long distance communication. The

advantages are that users would be billed on the number of bytes of information transmitted and received on a digitized system, rather than by the minute, plus a dedicated line would not be necessary for communication, reducing the load on the system.

Packet-switched networks are a fairly recent advancement in long distance communication services, providing more accurate and less expensive data communications. Terminal or computer-generated packets of information containing up to 1024 bits are individually transmitted through a "store and forward" procedure. The communication link is dedicated, but the network can be shared by many users. Each packet of information will have an address, along with a code indicating the size of the packet and the number of packets per message. The receiving equipment will require buffers to store and queue the packets of information; but, to users the system will appear to be a point-to-point connection. Packet switching is most efficient when low to medium volumes of data are being transmitted.

User Terminals

In developing a terminal, both technological and user requirements have to be considered (Handler, 1982). Technological concerns include:

Network Interface:
    transmission speeds, one-way or two-way transmissions, ease of access and equipment costs.

Information Display:
    format, graphics, color, voice? hard copy? motion? and cost.

Processing Capacity:
    programmable versus built-in programs, type of terminal (dumb or smart) and costs.

Storage Capacity:
    memory, access times required, read only versus read-write and cost.

Users primary interests lie in the following:[3]

1. Control over the time of display.

2. Fast access and display times, under three seconds per page would be a descent objective.

----

3. Brown, H. G., "Implementing Videotex Standards: A Comparison of CEPT and PLP," paper presented at Videotex '82 in New York, June 28, 1982, p. 4.

3. Terminals which hook directly into television sets.

4. Ability to access a variety of different databases.

5. Respectable graphics and a low transmission error rate.

6. Low equipment and system usage costs.

As mentioned previously, a user terminal can be either a transponder or transmitter type, addressable or nonaddressable, intelligent or dumb. For viewdata, it will be most compatible if terminals have enough memory to hold several pages of information. Also, the terminal should interface TV sets via either the RF antenna or RBG (red, blue, green guns on color tubes). Using a keypad input system rather than an alphanumeric keyboard will result in a trade-off between cost and user convenience. However, before system operators decide to provide less costly keypads in hopes of increasing viewdata penetration, they should remember that a keyboard input system will be easier to use, increasing system satisfaction and reducing disconnect rates from user frustration in the long run. Analogous to this are the recent problems of Texas Instrument, which can be attributed to a decision to forego

selling service functions and attempt to sell home computers on the basis of price.

Other input considerations include graphic input, aural input, video input and sensory input (detection alarms). While text may be the dominate data transmitted upstream over videotex systems, it would be a fatal error to rule out the potential of any of the above mentioned attributes in making or breaking videotex in the future. With the advent of teleconferencing, graphic conferencing and voice conferencing, the ability of a system to handle and a terminal to input video and voice data could be crucial to system survival (Brown and King, 1982). So, when discussing user terminals, it is necessary to include input devices such as a joystick (games), a light pen, speech recognition devices, sensors and still frame cameras.

Chapter III

VIDEOTEX SERVICES: WHAT WILL THE CONSUMER GET?

Trends in Society

The evolution of videotex will not be totally dependent on the whims of consumers. A major thrust aimed at gaining acceptance will come from the business sector--banks and retailers in particular. Just about any service industry that is labor intensive can benefit from a videotex system. The three areas that will provide businesses with the greatest cost savings will be in the automation of transactional processing, messaging and information retrieval. A study by the author found that a videotex system (closed-user group or local area network) that stores a company's essential data at their employee's fingertips will save that company up to 50% in storage space, reduce file and retrieval time by up to 80%, reduce the clerical staff by 25% and save the company 50% to 65% in paperwork related expenses. Messaging would reduce the time and

expense spent on communications by some 33%, while increasing office productivity and eliminating intrusive interruptions. Lastly, transactional processing within a company, which is manual labor oriented, can be automated, resulting in substantial labor savings.

Likewise, it will not be videotex directed solely at serving the business sector that guarantees its emergence into our society. As mentioned, banks and various retailers will push the technology onto consumers in order to benefit from its cost savings (Bartlett, 1981). Bankers have already begun to initiate the practice of providing free or low cost decoders to their customers to take advantage of the cost savings (Haslam, 1982; Kent, 1983). The major advantages bankers and retailers will point to in rationalizing videotex is the resulting higher margins earned (at least in the introductory stage of the technology) from reduced labor costs, the reduction or elimination of inventories and thefts and the overall convenience of the technology in providing improved customer service.

Still, it is possible that the introduction of videotex will fizzle if consumers reject the benefits of this technology. For that reason, it is important to analyze the current trends in consumer behavior and society to see if the benefits of videotex mirror the future needs of

consumers. As Victor Hugo once said,

> "Nothing in this world is so powerful as an
> idea whose time has come."

The trends that are shaping our society today seem to point towards the need for a service like videotex. For instance, there is a growing desire for people to do more at home, and thus the home is becoming the focal point of people's lives.[1] An offshoot of this is a reduction in migratory habits; people are opting to remain residing and working in familiar and secure surroundings. This has to be balanced against the need for people to settle in areas where jobs are available. Still, videotex allows people to do more at home, whether it be work, entertainment, education or communication.

A second trend is the changing make-up of the home. According to the 1980 census, in the years between 1970 and 1980, the number of single person households has jumped from 19% to 26% of all U.S. homes. In that same period, the number of households headed by a female increased from 11% to 15%. There has also been a substantial increase in the number of two-working-parent households (with the working female being exposed to automation in the work place). The

----

1. "Five Trends Aid New Media," Advertising Age Electronic Media Edition, June 24, 1982, p.4.

working homemaker now has a dual role to play and will need assistance to accomplish many of the time consuming household chores. Other demographic changes to be considered include the growing elderly population, the emergence of a substantial Spanish speaking population and the recognition of the rights of handicapped individuals.

A third trend is the fact that consumers desire and will seek out greater amounts of product information to reinforce their purchase decision: the emergence of the "smart shopper".[2] Parallel with this is the growth of consumerism and the belief that the seller should beware.

Another change occurring is that people are seeking a wider range of life styles and with this, a desire for better product values and excellence in workmanship.[3] A greater emphasis is put on leisure time activities and people have the discretionary income and credit to spend in the pursuit of leisure activities. Tied into this trend is the consumer's growing need for immediate gratification, with satisfaction resulting more from completing a purchase than from the actual use of the product.

----

2. Ibid., p.14.

3. Ibid., p.14.

A fifth trend spotted is a reliance by people on communications to solve their problems.[4] Moreover, in the marketplace, consumers are less willing to deal with hard sell unknowledgeable salespersons, and instead, rely on less personal relationships to accomplish their shopping needs (e.g. mail and telephone). Most likely, this desire of consumers has led to the substantial growth of mail order business in the United States today.

Also, people are becoming pro-technology. The plethora of computer advertisements, promotions and articles have conditioned consumers for the onslaught of computer-related services that will evolve in the next few years. In fact, with people becoming familiar with new high technology devices in both the home and office, the complexity problem associated with using a videotex system should be minimal.

A seventh trend that will suit videotex service providers nicely is that people in general are becoming more time-oriented than cost conscious. People in the mid-to-upper income brackets will gladly pay for services that eliminate the boring and tedious chores that drain them of precious time and energy. This becomes especially true in households with two wage earners or those with only one

----

4. Ibid., p.14.

parent where a premium is put on time spent relaxing.

Three other trends also deserve mentioning. One is the increasing need people feel for security; security from crime and preventable accidents like fire. Another is the concern for energy management in the home and on the road. Related to both of these trends is that the 1980 census shows that rural America is growing faster than metro areas and the suburbs faster than central cities. The implications of this are that either consumers will have to travel farther to do their shoping or retailers will need to branch out their operations into rural America. Both of these alternatives are inefficient for the consumer and the retailer.

So, what benefits will videotex services provide to consumers? Most importantly, videotex will eliminate some of the tedious tasks required in today's society that few enjoy. This includes having to run out to the bank before it closes Friday afternoon, shopping only for non-prestigious items like socks and tires and relying on a travel agent to find the earliest flight to Katmandu. It is also the perfect medium to satisfy the growing need for information in America. Videotex will also provide the extra educational opportunities children need and that their parents want their children to have. Plus, having a

videotex service will satisfy American's societal need for status--the Venture One experiment had residents of Ridgewood, New Jersey lining up to get on-line. And all of this is provided in a single package, neat and clean just as Americans like it.

As for videotex's shopping and banking benefits, it will reduce the amount of travel time people spend, with a corresponding reduction in transportation expenses. Videotex also offers people an extensive product selection capability from one place and at one time, and more importantly, the monthly billing for services rendered is not immediately felt by the user. While videotex's transactional services benefit shut-ins, it also means anyone can shop at their own convenience with no concern for store hours, inadequate or crowded parking, the weather, in-store congestion during peak hours, long checkout lines or shopping fatigue. Videotex also makes product and price comparisons simple and allows consumers to access the amount of information each needs to make a decision. Moreover, with the cost savings manufacturers and retailers will incur, consumers can expect a subsequent reduction in prices.

The Services

The value of videotex will be in its ability to unify a multitude of communication services into one system which users can access and use without any difficulties. In other words, system operators will need to provide an electronic supermarket of communication services designed to satisfy as many business and consumer needs as possible. However, to be successful, these services must be an improvement on services currently available, or a new service filling an unmet need for a substantial population or a substitute for some service currently offered.

While the number of services that can be provided either locally or through a gateway is unlimited, the total audience is not. Videotex services will need to fight for a piece of the media pie. The situation is analogous to that faced with cable programming today: entertainment viewing has not increased substantially due to cable services, rather cable has taken away portions of the entertainment pie that movie theaters and the TV networks had previously held. Videotex operators must prove to consumers that their services are better than those presently available so that

consumers will allocate their information search, shopping, banking, messaging and computing hours to videotex usage.

The major variables that will be used by consumers to evaluate videotex services include cost, utility, convenience, ease of use and reliability. Three other important factors are the timing of service introduction, the opportunity for people to experiment and become familiar with a videotex system prior to purchasing services and the technological capabilities required (Ducey and Yadon, 1982). Like the telephone before it, the fears and apprehensions people have for this new technology will disappear with improvements in system design. There are five general categories of services, all of which will be discussed in the following chapter. The categories are information retrieval, transactions, messaging, computing and telemonitoring. For this discussion, the major emphasis will be on the services provided for the home consumers, though most are applicable in the business environment.

Information Retrieval

Information retrieval requires either a touch-tone phone, numeric keypad or keyboard to order up desired frames. Also, a modem or decoder may be required, depending on the videotex system design.

This category has the broadest range of possibilities, with services ranging from news to education to advertising to pay-per-view TV. System operators and IP's need to develop software that is imaginative and useful, while not being overly complicated to work with. The content of the services will include more than straight information/news oriented material, in fact a major application of information will lie in providing users with self-help services.

As the plethora of self-help publications recently available point out, this area of information retrieval is almost boundless. If the service is beneficial to the user, then it will be accessed by many subscribers. For instance, home repair and automobile repair could be very useful services and offer advertisers the opportunity to sponsor a

service that millions of system users could access time and again. Other interesting applications could be in the area of improving family life (since the home is becoming a focal point of society once again), improving a person's mental capabilities (e.g. educational programs or quizzes), skill development, value development and financial and health monitoring.

The Viewtron experiment, carried out by Knight-Ridder and AT&T in 204 Coral Gables, Florida households, reported that 12 of the 14 most popular categories were information oriented. It should be noted that security and energy management services were not offered in the experiment and that both computing and messaging capabilities were severly limited. The order of service popularity were as follows:[5]

1. News

2. Bulletin Boards

3. Local entertainment and events

4. Food and dining

----

5. "Key VIEWTRON Test Results: All Systems Go For Launch," The Viewtron Newsletter, June 28, 1982, p.5.

5. Education

6. Consumer information

7. Shopping

8. Games and quizzes

9. Sports

10. Health and medical information

11. Travel

12. Money management

13. Home

14. Automotive

An interesting potential of videotex is hybrid services, which combine the technologies of two or more services. For instance, a medical information service could be sponsored by a pharmaceutical company, providing information on various ailments and their cures. It could also provide a means by which users could purchase necessary

medical supplies through the videotex system, though filling prescriptions could create some legal and ethical problems. A system could also provide a means for direct messaging between doctors and patients. Also, an emergency medical button that would notify an ambulance service of a user needing immediate assistance could be included. Similarly, the Venture One test had auto-dial capabilities where a viewer could be connected with a retailer by phone at the touch of a button. Furthermore, users could download medical software into their personal computer which assists them in evaluating their physical fitness or software that keeps track of a diabetic's diet. An imaginative service package like this offers users the ultimate in utility while combining the advantages offered by each of the five basic service categories.

For advertisers, the two most useful videotex services will be information retrieval and transacting. For information retrieval, advertising and sponsorships of information services are two of the ways advertisers can use videotex. Basically, advertisers can use a videotex service to further educate interested consumers about their product beyond what traditional media can accomplish: more closely examining the differences between it and the competition, providing alternate or the correct usage of the product or just reiterating the product's key selling points in more

detail. This information would also help to reinforce a consumer's purchase decision. An interesting possibility videotex presents advertisers is to interconnect themselves with their consumers in an open line (messaging) that can be used for grievances or feedback on product performance. Videotex advertising will be discussed in more detail chapter VI.

As mentioned, a pharmaceutical company could sponsor a medical information service or Budweiser could sponsor a sports scoreboard. It will be the advertiser's dollars that make it possible for many of the information services to operate because consumers, while finding the information helpful, would likely be apprehensive about paying for something offered free by a local library or that can be found in the newspaper. The key to developing a successful videotex system will be in discovering exactly what services consumers will pay for and what they expect to receive free of charge or at least pay for in one small monthly charge. On a cable system, videotex could become a nested tier service like the other cable programming offered on a tier basis. While developing the accounting software for this system could be quite a headache, the financial incentives to system operators and IP's is readily apparent.

Transaction Services

Touch-tone phones can input the necessary information needed to carry out an electronic transaction. An alphanumeric keyboard with at least 40K of memory will provide the best graphics. With 40K of memory, a keyboard will accept and display geometric graphics which are more aesthetically pleasing to the user. Also, with a keyboard, it is easier for consumers to special order their merchandise or to communicate special instructions to another party.

In this section, two types of transactional services will be discussed: home shopping and home banking. Both services offer advantages to the users and marketers, making them likely services to be provided on every videotex system. The chief attraction of transacting capabilities is convenience, though consumers can expect economic advantages due to the savings in overhead experienced by businesses offering their products via transactional services.

Home Shopping

This category can be subdivided into two different services. First, there are "buying services" which require little or no shopping. The purchasing of tickets or the making of reservations are the primary applications. In the Viewtron test, Official Airline Guides, Inc. experimented with putting their airline schedule on-line so consumers could prepare their own travel itinerary. The opportunity for consumers to directly make their own reservation would be an obvious extension of sports, theater and restaurant advertising.

The second shopping category is "shopping services" which require users to search out various products or catalogs listed in a system. Services as diverse as off-track betting and spiritual assistance fit in this category too. An interesting observation from the results of the Viewtron test is that consumers are more likely to purchase products via videotex which are lower risk items, at least in the introductory period of the

service. The specific purchase intentions listed are:[6]

HIGH RISK

- 8 percent for major purchases, such as furniture and refrigerators.

- 24 percent for soft line items, such a groceries and clothes.

- 34 percent for hard line items, such as small appliances.

- 34 percent for services, such as plumbers and florist.

- 46 percent for bargain and sale items from major retailers.

LOW RISK

In analyzing this relationship of risk to videotex shopping, the low percentage of users desiring to make major purchases can be attributed to more than just risk. Many of the major purchase items are image merchandise which perform more than a functional purpose. Since the graphic capabilities of videotex do not lend itself towards creating or maintaining a product's image, these products cannot be expected to sell or even be advertised on a videotex system until photographic capabilities are possible. Other drawbacks in attempting to sell high ticket items on

----

6. Ibid., p. 5.

videotex are the expected long delivery times associated with direct marketing sales (people want instant gratification), a lack of post-sale service that is also typical of direct marketing sales and the fact that sales via videotex do not allow for any social visibility and prestige a consumer feels from entering a Gucci's or Sak's Fifth Avenue.

During the 14 month Viewtron test, almost 1000 purchases were transacted via videotex with 139 of the 204 households making purchases. The average expenditure per household ordering was $68.[7] Unfortunately, no data was available on the timing and growth of expenditures for products as the test progressed. On the topic of interactive ordering at Videotex '82, Bill Waites, Vice Chairman, Stone & Adler, listed the four most ordered items on Prestel: leaflets/brochures by 87% of the system users, goods 40%, entering contests and sweepstakes 59%, hotel and travel reservations 23%.

Marketers can use home shopping to either make sales directly to consumers or to generate traffic in stores carrying their products. The potential for co-~^Sop advertising is increased by the advent of videotex as a key

----

7. Ibid., p. 5.

information medium. Videotex will also allow for more effective segmentation of markets due to the types and amount of data that can be assimilated on system usage behavior. Better segmentation and the direct interaction with consumers can lead to greater reliance on impulse buying and possibly lead to the ultimate in capitalism: production activated by direct order from the consumer.

The combination of advertising and home shopping is a natural for direct marketers. The impact of videotex on the marketplace should be very interesting. The main question to be answered is: What will happen to prices when consumers are able to compare retail stores—or better yet, have an intelligent terminal compare for them—for the lowest prices in town...or the nation for that matter?

As Steiner's Dual-Stage Model implies, consumers armed with all the necessary information to make a purchase decision and who are ready to buy have only one decision left to make—where to buy the product. This decision is typically made on the basis of price, and from the information they have gathered, consumers have a good idea as to what is a fair price to pay. So, it would be expected that all retail outlets for a particular product (at least for high demand items that generate traffic) would be priced the same.

It does not take much imagination to see the potential for price wars due to videotex where a retailer will sacrifice profits from the high demand products to gain store traffic, then make his profits by selling other low demand items at higher prices. If this becomes the case, then those retailers with the lowest overhead will survive. But, what will happen if manufacturers or wholesalers decide to bypass retailers and sell their high profit goods directly to consumers? And, what will happen if consumers decide to purchase only the lowest priced items from each store? It is possible that an entirely different distribution system will develop similar to that of direct response methods currently used: one where retail outlets become specialized in a particular product line.

As with direct response advertising, retailers will be able to use videotex to re-attract lost customers, retain current customers and to expand their geographic and service base. The problem will be in uncovering the strategies that will accomplish these goals. The advantages local retailers do hold over national or regional distributors interested in forward integration through videotex are that consumers are familiar with them already and that home shopping will never totally replace the social interaction of in-store shopping. Retailers may also need to better serve customers

after the purchase in the future, or before the purchase for that matter, to create store loyalty. For example, besides product, price and store information, local retailers could make it possible for shoppers to find out if a product is available prior to leaving home.

The future of the discount store could be in doubt if videotex penetration levels reach those of telephones or televisions. Manufacturers generally do not care to have their products sold through discount stores if they are selling well at the regular price because of the loss of control they experience over pricing. It does not help their relationship with their retailers who charge the suggested price for the products either. To eliminate the problem of discount stores, manufacturers could offer their surplus products via videotex at a lower price than that charged in discount outlets. Consumers who would normally shop the discount store (assuming that these customers would also be videotex users) could then buy the product cheaper interactively and not have to be seen in a non-prestigious store. Again, the potential for a co-op arrangement between manufacturer and local retailer is very good. In exchange for eliminating the local discount outlets, the manufacturer could have the retailer handle all interactive sales in a local area. This accomplishes two things: it sells the product for the manufacturer at a higher price than

wholesale and it creates a relationship between consumers of the product and a local store where the product can be purchased, thus creating the potential for greater in-store traffic.

The acceptance of home shopping will grow as people become familiar with videotex services. At the present time, this service is too foreign to the behavior patterns of most people in society to expect instant adoption. Adoption will be quickened by the acceptance of teletext systems and by consumers realizing that all the great stores can be shopped without having to travel to the four corners of the world. Home shopping will also need to be made into a "fun" event in order to gain and keep consumer's attention. It must be remembered that services geared towards entertainment succeed far more times than do task-oriented services. So, care must be taken from the very introduction of videotex to market home shopping in the proper vein.

Home Banking

At Videotex '82, Bill Cornfeld, Director of Electronic

Information Services, Chemical Bank, outlined four forces that were responsible for the changes occurring within the banking industry. These forces were the deregulation of interest rates, increased operating expenses, new forms of competition in the industry and the bank's inexperience with the pricing of services like checking that was once offered as a free service. Each of these four forces point to a need for a better communication service between banks and their customers.

When interest rates are completely deregulated on March 15, 1986, bankers will already need to be in position to offer customers competitive rates that will attract new deposits and be able to make up for the revenues lost due to deregulation. One way for this to happen is to decrease the high operating costs associated with the labor intensive services now offered by banks. This means reducing the number of employees, supplies and physical locations needed to handle business. However, since banks are looking to grow, geographically and by product line, they must be able to expand without increasing in physical size in order to lower operating costs. Getting involved in viewdata systems is one way for banks to accomplish this growth objective.

Offering interactive home banking will also give banks a competitive edge over the growing competition for the

consumers discretionary income. Banks will be able to offer more specialized and sophisticated services, even services designed for a specific individual, which customers desire even today. Also, interactive banking will allow the working couples, shut-ins, the elderly and people residing in high crime areas the opportunity to do their banking conveniently.

The attraction home banking has for any viewdata system is that it can act as a foundation to enhance other services, like home shopping, while also subsidizing part of the costs of providing the service. For example, Banc One in Columbus, Ohio, is offering an interactive service to area residents for $7.50 per month and Chemical Bank's Pronto interactive service will be offered for about $10 per month. Without the bank subsidizing the service, prices would be higher as in the Viewtron system where users are expected to be paying $12 to $15 per month for the viewdata service (not including telephone connect and terminal purchase costs). It appears that it will be the major banks--Citibank (Home Base), Chemical Bank (Pronto) and Chase Manhattan Bank (Chase Home Banking)--who will absorb this initial cost of providing home banking services in exchange for gaining customers in the future.

To accommodate the needs of potential viewdata users,

banks must evaluate the demand consumers have for instant information about accounts, balances and bank hours and how home banking will fit in competitively with what other financial services offer consumers. Banks will also need to develop a system with high security levels to assure users that their accounts cannot be tampered with, or at least insure their money if someone is able to access and alter account information through the system. The potential for inter- and intra-bank communications must also be evaluated carefully in order to find the value of an interactive system to the banking industry.

The services that are or will be offered via home banking include bulk payment services aimed at servicing the needs of small businesses (e.g. payroll, income statement and balance sheet preparation) and single payment and reconciliation services (Sutherland, 1982; Tydeman, Lipinski, Adler, Nyhan and Zwimpfer, 1982). What individuals will be offered include:

- Electronic checkbook for interactive purchases.

- Electronic fund transfer.

- Electronic credit cards or smart cards.

- Bill payments.

- Travelers check ordering.

- Balance inquiries and reconciliations.

- Information about the bank, loans and rates of interest and certificates, possibly even in comparison with other banks.

- New account applications.

- Home budgeting assistance.

- Cash management and financial planning information, such as cash flow programs and portfolio analysis.

- Commodity reports.

- Tax planning assistance.

People will not buy viewdata services just to pay their bills, so the introduction of all these services is necessary to make home banking a success. Banks will also need to overcome the fact that interactive banking eliminates the float period consumers enjoy with traditional checking and that videotex actually penalizes a user.

Within the bank itself, the problem of an initially low transaction volume will make home banking unprofitable in the short run. The other main disadvantage to be settled is with the security problems that must be carefully controlled.

The advantages offered by home banking include convenience, time and transportation cost savings, safety for people banking in high crime areas and accessibility to various financial services. One favorable attribute of home banking is that it is not as frightening to consumers as computers seem to be, possibly due to the acceptance of EFT's. Home banking is the natural progression of banking innovations: branch offices, drive-thru tellers and automatic teller machines. Also, home banking is adaptable to viewdata systems using either cable or phone lines.

For bankers, home banking will reduce costs substantially and allow them to compete against other financial services for consumer's money. In fact, home banking could reduce by half the banking industry's expected total handling and processing costs of $80 billion dollars in 1990.[8] Videotex banking is also relatively inexpensive to set up and operate over the long run. The software is not

----

8. Kent, Catherine. "High Interest in Home Banking," PC World, May 1983, p. 69

very complicated to use, which is also an advantage for consumers. Moreover, a major benefit to the banking industry as a whole will be the capability to communicate information on urgent business, such as "hot" checks, to all banks and retail outlets connected to videotex systems across the country.

Electronic Messaging

Electronic messaging, or electronic mail, is the delivery of a document or message from one point to another by electronic means. An alphanumeric keyboard is required to input messages until voice recognition systems are developed, though numeric keypads can be used to send preformatted messages. Combining this capability with store and forward technology enables a user to substitute both overland mail and direct dial telephone with electronic mail. Store and forward capabilities in either the textual or voice mode will eliminate the need for recalls when the desired party cannot be reached.

There are many types of messaging formats that will be available. Point-to-point personal correspondences allow two parties to interact electronically. Point-to-multipoint allows the sending party to distribute his message to numerous parties at various locations and is a way for closed-user groups to interact with each other. A community bulletin board service enables users to place and read messages meant for everyone in the community. Computer conferencing (teleconferencing) provides for the

distribution of textual and graphic data between interacting parties and when combined with audio and visual transmissions becomes a substitute for traditional meeting procedures. Two other messaging formats are those forming a local area network within a business establishment and that used by Qube, which is on-line polling.

The two basic advantages electronic messaging holds over other forms of communication are that it is less expensive and more convenient to use (Brown and King, 1982). It is also possible to have the reception of messages acknowledged so that the sender is assured his message is received by the intended party. Moreover, it becomes possible for hard copy records to be made of textual conversations to be used for later reference.

Electronic messaging also provides users with the ultimate in communication--the ability to send and receive messages 24 hours per day and at one's own convenience with no regards to time zone differences. Telephone tag and intrusive phone calls can be eliminated, which should make the office environment more peaceful and productive. By indexing the incoming messages, users will also be able to access only the messages they wish to read, reducing the problems of electronic "junk" mail and mail from undesirable parties.

The disadvantages of electronic messaging are that very little testing has been done in the consumer area. The Source and CompuServe both offer messaging, while the Times Mirror experiment found messaging to be one of the most desirable service available;[9] but the penetration level of this service is basically nil. This means that very few people can presently communicate with each other electronically, decreasing the value of this service until a significant portion of the population is wired for service. Also, in situations requiring immediate response, electronic messaging proves to be inadequate. Lastly, business executives and consumers will both need to sharpen their typing skills to make electronic messaging efficient and fun to use.

Electronic messaging will not replace many socially-oriented calls. Plus, its utility will be judged by its ability to improve productivity beyond that of available modes of communication. For instance, advertisers can establish a means by which consumers can interactively give feedback on various products or ask assistance in the use of a product or complain about services rendered. If users do not neglect electronic messages, this may be an

----

9. "Games rank first on videotex list," Advertising Age, March 31, 1983, p. 8

excellent medium by which to send reminder messages to consumers on unpaid bills, yearly maintenance needed on equipment or to alert a retailers best customers of upcoming sales.

Computing Via Videotex

Through either one-way or two-way transmissions, it is possible for videotex users to enjoy the luxury of accessing and working with a wide range of computer software. This software can be used for entertainment, education, training, business application or self-help.

There are two ways that software can be used on a videotex system: down-loaded or remotely. If the consumer has an intelligent terminal with 64K of memory and some type of local storage capability, then he can have programs sent directly to him through the videotex system. Basically, software is transported from a mainframe computer to a microcomputer. Upon a users request for a particular program, the software's content is transmitted in digitized form either via cable or in the broadcast TV's signal at 2,400 bits per second. Once the program is received and loaded into the terminals memory no other transmissions need to take place. The user can use the program as if it were his own software. However, the problem with this method of computing is in protecting the copyrights on software.

In remote computing, a two-way interconnection between the user and the database computer must be held. Basically, this will be a timesharing service like that of the Source and CompuServe. There is no need for local memory or storage and a numeric keypad can input all the necessary commands if the database computing service is set up in a menu format. Remote computing will overcome the problem of copyrights since the software never leaves the database computer, while still offering the same service to users. Transmissions can be sent at 300 bits per second so either telephones or cable links can be used. The main drawback of remote computing will be its cost. With the dedicated connection required, the communication link costs alone could be substantial.

Whichever method is used to provide a computing service, the value of this videotex service cannot be underestimated. Not only will it provide a method for marketers to sell various services to consumers (e.g. education, training), but the utility of such a service could very well decide whether videotex survives in the long-run.

In the early stages of videotex evolution, the entertainment services--such as games and quizzes--will help to attract users, especially among children. And if it is the younger generations who will ultimately decide the fate

of videotex, then it becomes doubly important to attract children early in their lives. Also, the fact that parents will not have to purchase new game cartridges every few months when their children become bored with the games they already have will be a large enough economic incentive for many parents to purchase a videotex service. In fact, in the Times Mirror test, 79% of the users considered games as the essential service of the videotex system...the most for any of the services offered.[10]

From using games, consumers will soon discover the value of educational programs, business assistance programs and whatever else is offered. The educational possibilities for in-service training, educating the handicapped who cannot get out of the home and for supplementing or replacing traditional methods of educating children and adults are tremendous once any human factor problems are settled (Elton, 1980). It will also be possible for users to create their own software, store it in the database computer and sell it to others on a per use basis (Bergland, 1982). The range of services provided by a computing service on a videotex system is only limited by the required consumer hardware and the imagination of the programmers.

----

10. Ibid., p. 8.

Telemonitoring

The application of home security and energy management services by a videotex system is another way of introducing the total videotex package to consumers. And, when combined with information retrieval, transacting capabilities, messaging and computing, provides the businessman and consumer with a service that fills the needs of just about everyone in one way or another.

To provide telemonitoring will require establishing a dedicated line between the database computer and the subscriber. The database computer can then scan remote subscriber terminals every few seconds. If the terminal detects an alarm or is programmed to change the atmosphere of the home at a certain time, then it alerts the database computer. From there, the computer can recheck the alarm by automatically dialing the subscriber's phone number and also notifying the proper authorities. This service can be invaluable in savings lives and property by detecting any disturbances at the earliest possible moment, even when no one is home or awake (Baldwin and McVoy, 1982).

As for energy management, the cost savings alone will be enough of an economic incentive for both consumers and city governments to purchase telemonitoring services. In

the home, energy levels can be preset to coincide with needs so that temperature changes can be automatically regulated or that the dishwasher turns on late at night when energy usage rates are lower. For the local government, better control over vandalism and theft of energy monitoring equipment can be provided. Meter reading can also be accomplished from the headend, reducing labor costs significantly.

Telemonitoring accomplished over cable or phone lines is a relatively new service to many communities. Yet, the value of security is increasing each year and studies (Price, 1981; Baldwin and McVoy, 1982) have shown that homes protected by interactive security systems are significantly less affected by crime or damaged by fire than non-serviced homes. The introduction of telemonitoring will be slowed by high installation costs; but the profits for system operators are very good so they will most likely attempt to cash in on this service in the early stages of the evolution of videotex.

Chapter IV

PRIVACY AND CONSUMER PROTECTION

Every new product or service has some amount of impact on society. The hope is that the impact will all be beneficial, but rarely is this the case. Therefore, it is necessary to analyze the consequential issues to determine what affect innovations will have on society. For videotex, the issues are many (Talarzyk and Widing, 1982; Tydeman, Lipinski, Adler, Nyhan and Zwimpfer, 1982) and for advertisers specifically, there are two issues of concern: consumer privacy rights and consumer protection.

The following chapter will briefly outline the privacy and protection issues, which have become topics of debate as of late. However, it should go without saying that both concerns over intrusion of videotex user's rights and consumer protection could become non-issues very soon. Videotex may need advertising to support it, but it will be the consumer's subscription to services (and not cancelling services after a couple of months) which will make or break

the technology. It is in the best interest of system operators to appease any fears consumers might have about their rights being violated. Moreover, the impetus initiated by the state of Wisconsin (Westin, 1982) in protecting videotex subscribers has set a precedence for other states to follow. As for consumer protection, advertising guidelines established for other media, and the advertising industry in general, could just as easily cover videotex advertising.

The Privacy Issue

Videotex and two-way interactive systems (e.g. Qube) have the capability to collect extensive data files on every household connected to the service. This includes, depending on the types of services subscribed to, records on a household's financial situation, purchasing patterns, energy usage, security systems, political persuasion and so on. Much of this data must be collected in order to allow users the convenience of shopping and banking at home, to save them money by reducing their energy bills or to even increase their safety. However, from the aggregation of all these records, numerous negative benefits are possible:

financial records can be electronically tampered with, marketers can "junk mail" potential customers to death or criminals can easily discover an individuals daily patterns for when they are and are not home.

Nash and Bollier mentioned four ways in which privacy rights can be violated.[1] Intrusion, either by electronic surveillance or by the polling of alarms, is one manner in which rights can be violated. Another is through the interception of information by eavesdropping parties. A third way is by the misuse of collected information. The last way is through the aggregation of information into a demographic or psychographic profile of individual households, which is then shared with or intercepted by third parties.

It became evident that something had to be done to protect citizens from the potential abuses misuse of information could bring about. In 1972, the Privacy Act was enacted to protect individuals who had identifiable records kept on them by federal agencies. Then Secretary of Health, Education and Welfare, Elliot L. Richardson, had a study commissioned to explore the impact computers would have on

----

1. Nash, Deanna C. and David A. Bollier. "Protecting Privacy in the Age of Hometech." Technology Review, August/September 1981, pp. 68-70.

record keeping of individualized files. The findings indicated individuals had no control over the use of their own records and technologies had failed to provide a means for protecting the individual from the undesireable consequences recorded information could create (Privacy Law in the States, 1977; The Privacy Act of 1974: An Assessment, 1977; Technology and Privacy, 1977). The resulting Privacy Act incorporated eight principles to correct this problem. The principles are as follows:

1. The Openness Principle--no personal-data record keeping system can exist in secrecy and the record keeping policies, practices and system shall be open to inspection. Furthermore, federal agencies cannot conceal the existence of any such secretive system. This principle brings record keeping organizations under public scrutiny and increases public awareness of the fact that information files do exist. Federal agencies are now required to list their practices annually in the Federal Register notice.

2. The Individual Access Principle--anyone who has a personal data record kept on themselves which identifies them in some way has a right to see and copy the information on that record. This is important in that it safeguards individuals from record errors, considering a person would

actually go through the trouble to check his record.

3. The Individual Participation Principle--an extension of the Individual Access Principle, this gives anyone with a record kept in their name the right to correct false information. The burden of proving a record false is with the individual. In 1976 alone, $36.6 million was spent by government agencies on correcting records.[2]

4. The Collection Limitation Principle--this puts limits on the type of information organizations can collect and states certain requirements which must be met in data collection procedures. Basically, information can be collected if it is relevant and necessary to accomplish a lawful purpose. The information must come from the individual too, no secondary data is acceptable, reducing the ability of different agencies to share data records.

5. The Use Limitation Principle--there are limits on the internal use of personal-data record information within a record keeping organization.

6. The Disclosure Limitation Principle--there are limits on

----

2. The Privacy Act of 1974: An Assessment, The Report of the Privacy Protection Study Commission, Appendix 4, July 1977, p. 76.

the external use of personal-data record information within a record keeping organization. This requires agencies to print an annual notice stating the use of records in a system, including categories of users and the purpose of such uses. A better system of accounting for record use has resulted and thus, a corresponding decline in the amount of information released. Specifically, this has reduced the ability of the news media to obtain information on individuals.

7. <u>The Information Management Principle</u>--the record keeping organization is responsible for establishing proper information management policies and practices, which assures that the collection, maintenance and use of personal information is necessary and lawful and that the information used is both current and accurate.

8. <u>The Accountability Principle</u>--the record keeping organization is accountable for its policies, practices and systems in regards to record keeping. Like the Information Management Principle, agencies are given an incentive to keep their collection and storage procedures up-to-date.

The Privacy Act was geared more for government agencies; however, the principles contained within it were also meant to lay a foundation for information collection

procedures in other situations. The emphasis of the Privacy Act is in establishing the individual's rights in regards to personal information records, placing the responsibility of database management on the record keeping organization and in creating a set of guidelines for a system of "checks and balances" between individuals and the record keeping organizations.

Warner Amex Cable Communications followed the example set by the Privacy Act by developing its own 11-point policy on maintaining privacy of the information collected by its Qube system. This company has been the pioneer on the issue of privacy within the industry by establishing its workable set of standards, procedures and policies with respect to subscriber rights. Cox Cable Communications has adapted a similar set of standards for its INDAX system. However, like the Privacy Act, the codes established by Warner Amex and Cox Cable have insufficient deterrents to misuse of information. It may be for this reason that Wisconsin legislated its own cable privacy act allowing for first-offense fines up to $50,000 and for $100,000 fines for additional infractions. In addition, provisions were made by which individuals injured by information misuse could sue the offending company for damages. Other states are following Wisconsin's lead.

The major disagreement on the privacy issue is who should be given the authority to watch over the industry: the government or the industry itself. The concern is whether or not the industry can do a sufficient job in protecting the rights of individuals. Even if the industry does regulate itself, it will still be necessary for the federal and the state governments to impose strict guidelines which are backed with stiff penalties for misuse or mismanagement of information. The fact that so many lives could be disrupted by the misuse of information (especially with the amount of information a videotex system could collect) is reason enough for the government to at the very least enact concise and strong laws governing the use of personal data records. As Deanna Nash and David Bollier stated, "When privacy is no longer regarded as a universal political right but instead as a commodity for economic barter, the door is thrown open for its exploitation".[3] Strong penalties are necessary to dilute the cost-benefit situation which unscrupulous individuals use in analyzing whether or not it is worth violating another person's rights.

However, since the federal government has seen fit to

----

3. Nash, Deanna C. and David A. Bollier. "Protecting Privacy in the Age of Hometech." Technology Review, August/September 1981, p. 75.

let the videotex industry develop privately, then the "watchdog" function should belong to the industry participants. The advertising industry has set up a workable system for regulating itself and there is no reason why the videotex industry cannot do the same. The cornerstone of this regulatory system could be Warner Amex's "Code of Privacy". The 11-point code, while based on the principles outlined in the Privacy Act, was developed on the idea that private corporations needed to provide subscribers with the benefit of interactive services while "guarding against real or perceived infringements of their individual rights".[4] The basic points in the "Code of Policy" cover the following:

1. Subscribers will have the information gathering functions of the provided services explained to them.

2. The company will maintain adequate safeguards to insure the security and confidentiality of all subscriber information.

3. Viewing and user responses will be kept only when

----

4. Warner Amex Cable Communication "Code of Privacy", 1981, p. 3.

necessary to permit billing and will only be released when the information is a part of the service provided (e.g. winner of a contest). No other individualized information will be collected on services rendered unless the subscriber is given advanced warning and given the choice not to participate in the service.

4. The company can develop bulk data on services for internal use. Third parties will not have access to the data until the identity of subscribers is not ascertainable from the provided data.

5. The company will only provide information to the government if legally compelled to and subscribers will be notified of this action first (Nash and Bollier, 1981).

6. Subscribers can examine and copy any information pertaining to them. Corrections will be made given reasonable proof is provided by the subscriber.

7. Individualized information will only be kept long enough to verify billings.

8. Subscriber mailing lists will not be provided to third parties without proper authorization from the

individuals on the list.

9. The company will comply with all federal, state and local laws pertaining to subscriber privacy and adhere to any industry codes of conduct.

10. Third parties who provide services to the company are required to adhere to the Warner Amex "Code of Privacy".

11. The company will continually review and update its policies and procedures to keep up with technological changes.

As was stated before, the protection of subscriber's rights is in the best interest of the system operators. Given the authority to enforce an industry code of operation, there is no reason to believe that the system operators cannot protect their subscriber's rights. The issue may not be on protecting the rights of individuals, but on educating people as to the implication of data collections, information storage and the usage of this information. Given that subscribers can be educated on these issues and have control over whether their names are included on lists sold to third parties, the problems being associated with videotex violating subscriber privacy rights

should be well under control.

As for marketers wanting demographic and psychographic breakdowns of the households served by a videotex system, it appears that they will have to settle for aggregate data that is not household specific. The fact that individuals are given the right not to be identified in a study or on a list assures this. Still, some individuals may welcome the opportunity to receive information from specific advertisers and authorize the disclosure of their names to pre-selected companies. Even with only non-specific aggregate data, advertisers will be better off. Look at what direct marketers can accomplish by mailing only to certain zip codes. Data on videotex users can be broken down into even smaller market areas than what is possible with zip codes, paving the way for more efficient sales and marketing efforts.

Consumer Protection

The issue of consumer protection has revolved around two basic items: consumers will have a difficult time differentiating advertisements from editorial statements on

videotex, and videotex may influence users to make purchases against their will. Actually, the concern is with protecting consumers from unethical sales practices, misrepresented products or services (false advertising) including specified warranties and guarantees and from impulse purchases.

The first problem is easily treated. Advertising is any paid form of communication delivered via a medium with the purpose of selling or creating some degree of awareness for a product or service. Editorial content is just that, an unpaid opinion stated by someone or something. The worry some have is that whomever regulates the technology will do so without regard for the content. Editorial content is covered under the First Amendment. Advertising has its own regulations set up. For the sake of protecting consumers, the emphasis on any regulation set for videotex advertising or for videotex content should speak directly to whichever extremity is to be regulated. To consider all material in a videotex database as the same would be a mistake.

As for consumer protection, in regards to false or misleading advertising on a videotex system, many questions remain unanswered. Also, will cigarette and liquor marketers be allowed to advertise via videotex? The answer depends on whether or not videotex is considered a part of

television or its own separate medium. What legislative acts will videotex advertisers be required to abide by? Obvious acts would include the Clayton Act (1914), the Wheeler-Lea Amendment to the FTC Act (1938), the Fair Packaging and Labelling Act (1966), the Fair Credit Reporting Act (1968) and the Magnuson-Moss Warranty/FTC Improvement Act (1975). There is also the questions of substantiation, corrective advertising, restitution and so on.

Before system operators can expect to become operational and partially supported by advertising, the answers to these questions must be found. The authority of the National Advertising Division (NAD) and National Advertising Review Board (NARB) over any advertising regardless of the media used is not questioned. The same holds true for the Federal Trade Commission, which holds jurisdiction over interstate trade. However, these regulatory bodies have not yet stated how videotex advertising regulation will compare to that of other media.

Common sense tells us that where similar cases have occurred in advertising violations in other media, the precedent set will carry over to videotex. For instances, false advertising will be reviewed by the NAD (or some videotex regulatory agency) and if claims cannot be

substantiated, then advertisers will be met with cease-and-desist orders. Likewise, system operators will probably have the same liberties granted the television networks in screening advertisements prior to inserting them into the system. The problem will be in establishing fair regulations which protect the consumer while not restraining trade. Will videotex sales be subject to a float period? Since information collected by a company belongs to that company, is it possible that videotex users have no rights when it comes to the privacy of information identifying them? The legal issues of videotex are in need of immediate study.

Chapter V

SURVEY RESULTS: ADVERTISERS USING VIDEOTEX

The objective of the survey was to uncover the desires and needs of advertisers who already have experience with videotex systems. Advertisers participating in viewdata tests were surveyed more so than advertisers experimenting with teletext and interactive cable. With this knowledge, system operators can better organize their systems to suit the needs of the advertisers who will most likely be subsidizing this technology in the future. Also, with the results provided below, it is possible to hypothesize on the course videotex advertising will take, at least during its introductory stage.

The survey (see Appendix) was distributed to 99 local, regional or national advertisers having some experience with videotex advertising. Initial contact was made with each company or retail store by phone in order to ascertain the names of the individuals responsible for the company's videotex experimentation and to let them know that a survey

was being sent to them. All surveys were then sent with an explanatory cover letter and a self-addressed stamped envelope within one week of the telephone contact. After a three week waiting period a reminder postcard was sent to all non-respondents asking for their cooperation in returning a completed survey and making sure that all 99 surveys had been received--six additional surveys had to be re-mailed. Of the 99 surveys sent, 63 were returned and 39 contained data that was usable. The 24 non-usable surveys were disregarded because they were mostly incomplete with only a couple questions answered. The 64% return rate was considered very good, as was the 39% return rate of usable surveys given the small population of advertisers who have videotex experience.

It is important to be aware of the limitations of surveys, and of this particular survey, when analyzing the data. Overall, mail surveys generate a lower response rate, with greater amounts of "no" and "don't know" responses given than with other forms of data collection. It is also possible that the wrong person answered the survey (e.g. the secretary) or that certain questions were misunderstood. A major limitation of surveys is that complicated issues cannot be dealt with; and therefore, most of the questions in this survey used nominal measures.

As for limitations of this survey, the low number of usable responses weakened the validity of the study. Furthermore, because a reliable source was not always obtainable, some of the advertisers with videotex experience did not have surveys sent to them. It is also very probable that the information that could have been obtained from the non-respondents would have changed the results significantly. The newness of videotex technology and a corresponding lack of understanding people have for its capabilities, meant that each respondent had the ability to go into different depths of coverage on what their company was attempting in regards to videotex advertising. This problem and the effect non-respondents could have had on the data limited the internal validity of this survey. Another problem that will persist in any type of research on the current videotex experiments is that each test to date is of a very small scale and does not allow information providers the opportunity to use services that could be normally offered (e.g. sweepstakes were not used, yet with a large audience sweepstakes could be one way to gain frame traffic).

Since nominal level questions were asked, the statistics available for analyzing the data were limited. Frequencies and two-way frequency distribution were the only appropriate analysis tools used in analyzing this data. The

rationale for this is that a majority of the questions involved open-ended questions requiring the respondent to give answers that had to be put into distinct categories. Also, without other survey results to compare this survey against and with the small number of usable cases, the need for chi-square analysis was negated. The data was tabulated using the SPSS program "Mult Response".

The Results: Frequency Distributions

As part of the author's agreement with respondents, the below data will not be linked to any particular company or individual. The only distinctions made will be between the product or service lines of the advertisers. The idea behind this survey was to set a foundation on which others could expand from; hopefully the results and the following analysis will stimulate debate and further analysis on the needs of advertisers. In many of the tables, the "total" figure is not in agreement with the totals due to rounding errors.

As Table 1 exhibits, advertisers were involved in tests of viewdata, teletext and interactive cable. The CBS/AT&T

Table 1: Tests Respondents Were Involved In

	Count	Pct of Responses	Pct of Cases
CBS/AT&T, Ridgewood	35	60	97
Knight-Ridder/Coral Gables	5	9	14
CBS/KNXT, Los Angeles	4	7	11
Times Mirror/Los Angeles	4	7	11
CableShop	3	5	8
Viewmart (Cox Cable)	2	3	6
Compuserve	1	2	3
European Testing	1	2	3
Cablevision	1	2	3
First Bank/Minneapolis	1	2	3
NBC Teletext/Los Angeles	1	2	3
Total responses	58	100	161

Table 2: Videotex Services Offered by Advertiser

	Count	Pct of Responses	Pct of Cases
Information access	23	34	61
Straight advertising	21	31	55
Transactional service	19	28	50
Information processing	2	3	5
Communication service	2	3	5
None	1	2	3
Total responses	68	100	179

Venture One test in Ridgewood, New Jersey, was the test most advertisers were involved with and rightly so since it has been acclaimed as the most advanced and realistically organized system in the United States. Unfortunately, a majority of the advertisers on what will be the first commercially activated U.S. viewdata system, Viewtron (not including The Source or CompuServe), tended to keep their experimentation plans and results proprietary.

Table 2 categorizes the types of services advertisers have experimented with on the various test systems. The most popular service was "information access" which included providing directories or sponsorship of a bulletin board. Straight advertising was described as information that was similar to advertising developed for magazines. Transactional services involved either home-shopping (direct marketing) or home-banking. The last two categories were relatively unused possibilities: communication services, described as opinion polling or direct contact with consumers; and information processing services, which was the sponsorship of quizzes and entertainment or educational games and could also include computing services. Telemonitoring services were not considered to be something advertisers would be involved with.

To date, a wide range of products and services have

been advertised on videotex systems. Since participation in the experiments was not advertiser specific and any company or retailer interested could be a part of the tests free of cost, it is interesting to note the average target market of the products and services advertised. This composite target market (see Table 3 through Table 11) is essentially up-scaled: Caucasians 18 to 65 years old with incomes of over $25,000, primarily white collar or professionals with at least some college experience, married with children and living in either a major city or its suburbs. The key to uncovering the potential for advertising is to compare these demographics with the demographics of known videotex subscribers or users.

One of the difficulties advertisers will be faced with in using videotex is that photographic quality pictures will not be available in the introductory--and probably the growth--stages. What this implies is that textual and graphic material will dominate the videotex advertising. In addition, the amount of text that is feasible to use selling any one product will most likely be limited to a couple hundred words. Long textual advertisements displayed on a display screen will lose its audience to boredom or eye strain very quickly. Therefore, any attempt by advertisers to create a product image will be severely limited by the textual and graphic boundaries within which they must

Table 3:   Advertiser's Target Market Age

	Count	Pct of Responses	Pct of Cases
Under 18	1	2	3
18-24	8	14	26
25-44	26	46	84
45-65	18	32	58
Over 65	4	7	13
Total responses	57	100	184

Table 4:   Advertiser's Target Market Income

	Count	Pct of Responses	Pct of Cases
Under $10,000	2	4	6
$10,000-$14,999	3	6	9
$15,000-$24,999	8	15	24
$25,000-$49,999	21	39	64
$50,000+	20	37	61
Total responses	54	100	164

Table 5: Race of Advertiser's Target Market

	Count	Pct of Responses	Pct of Cases
White	17	42	50
Black	2	5	6
Spanish	2	5	6
Oriental	2	5	6
No preference	18	44	53
Total responses	41	100	121

Table 6: Profession of Advertiser's Target Market

	Count	Pct of Responses	Pct of Cases
Housewife	15	19	44
Blue collar	11	14	32
White collar	21	27	62
Professional	27	35	79
Other	4	5	12
Total responses	78	100	229

Table 7: Advertiser's Target Market Education Level

	Count	Pct of Responses	Pct of Cases
Elementary or less	4	6	13
Some high school	4	6	13
High school graduate	13	18	42
Some college	17	24	55
College graduate	24	34	77
Graduate student	9	13	29
Total responses	71	100	229

Table 8: Life Cycle Stage of Advertiser's Target Market

	Count	Pct of Responses	Pct of Cases
No children	9	16	39
Children under 6 yrs.	18	32	78
Children 6-17 yrs.	17	30	74
No children under 18 yrs.	12	21	52
Total responses	56	100	243

Table 9: Sex of Target Market

	Count	Pct of Responses	Pct of Cases
Male	7	21	21
Female	1	3	3
Both	26	77	77
Total responses	34	100	100

Table 10: Marital Status of Target Market

	Count	Pct of Responses	Pct of Cases
Married	12	67	67
Single	1	6	6
No Preference	5	28	28
Total responses	18	100	100

Table 11: Location of Advertiser's Target Market

	Count	Pct of Responses	Pct of Cases
Suburbs	29	39	88
Major city	21	28	64
Small town	13	17	39
Rural	12	16	36
Total responses	75	100	227

Table 12: Type of Image Portrayed on Videotex

	Count	Pct of Responses	Pct of Cases
No Attempt	6	17	17
Consistent with other advertising	29	81	81
Other	1	3	3
Total responses	36	100	100

develop their creative work.

Table 12 punctuates the above mentioned point. In 81% of the cases, advertisers chose to portray their product or service in a consistent manner to that used in other media. Another 17% did not even attempt to portray an image with their advertising. Only one advertiser tried to create an image suited entirely for videotex. The implication of this is that videotex is considered to be a medium suitable for carrying on an image, but not capable of creating one. Moreover, it might be more appropriate to consider videotex as a new marketing medium rather than claiming it as a new medium on which to advertise. The bottomline is that advertisers can not be expected to use videotex to gain awareness of new products, except for teletext; but instead, they must leave this task to the traditional print and broadcast media.

If a system operator wants to sell space on his system, then it is essential that he know what features of videotex will be most attractive to potential advertisers. This survey found three significant attributes of videotex which appealed to advertisers: videotex's ability to provide information to consumers, the transactional ability of videotex and the interactive potential of the technology. These choices hit the core of what videotex can provide for

Table 13: Most Attractive Feature of Videotex

	Count	Pct of Response	Pct of Cases
Ability to provide information to consumers	13	20	42
Transactional ability	12	19	39
Interactive potential	11	17	36
Instant updating	4	6	13
Ability to reach up-scale market	3	5	10
Reach interested consumers/ decision makers	3	5	10
Opportunity to broaden distribution	3	5	10
Convenience	2	3	7
Ease of evaluation of results	2	3	7
Localization of information	2	3	7
Technical innovation	2	3	7
Do not know yet	2	3	7
Potential of reaching 98% of U.S. population	2	3	7
Free during tests	1	2	3
Minimal cost to change copy	1	2	3
Efficient use of media dollars	1	2	3
Instant credit check potential	1	2	3
Total responses	65	100	213

a marketer and accomplish the three basic functions of selling: inform, sell and post-sale follow-up. However, some of the attributes that have been considered to be a major advantage of videotex were not the most frequently mentioned. The biggest surprises would be the lack of acknowledgement of videotex's potential for market research, though ease of evaluation of results was mentioned. The few responses given to instant credit check possibilities, localization of information, ability to reach interested consumers and the ability to instantly update material were also somewhat surprising. The next step to take with this data would be to evaluate the responses in some sort of interval measurement.

Due to the fact that advertisers' experience with videotex has been limited, the responses to Question 10 (see Appendix) were anticipated in advance. Table 14 shows that the main goal of 70% of the advertisers in the videotex tests was to experiment with the medium. However, 12% of the advertisers were expecting to attract a given percentage of users and 6% were expecting a percentage of transactions per thousand to occur (see Table 20), which shows that a few advertisers are evaluating the value of videotex in more depth than the majority of the advertisers. If transactions are the goal of advertisers using videotex, then the optimum goal would be to obtain substantial, measurable action at an

Table 14: Goals of Videotex Advertising

	Count	Pct of Responses	Pct of Cases
Experimentation	28	70	82
Reach percent of market	4	10	12
None/not available	2	5	6
Percent of transactions	2	5	6
Find advertising strengths of	1	3	3
Increase product awareness	1	3	3
Be on leading edge	1	3	3
Reduce costs of catalogs	1	3	3
Total responses	40	100	118

efficient cost. The small scale of the tests might have limited what advertisers expected out of them too, and therefore, provides a reason for the lack of quantifiable goals.

More useful information came from advertisers' responses to their strategies used in the tests. The top two videotex advertising strategies both indicated that advertisers wanted to use videotex to expand the consumer's knowledge about their product or service (see Table 15). The next step would be to investigate the exact strategies advertisers planned for expanding their target markets knowledge about their product. It would also be interesting to review the creative guidelines established for the creation of an informative format and the end results.

Again, the depth with which certain advertisers are experimenting with videotex is evident by the responses exhibited in Table 15. Strategies looking to service the consumers' needs and to improve dealer relations are derived by careful analysis of the potentials for the technology. One interesting output was that 21% claimed their strategy was to find out what works best on videotex. The problem with this is that this response appears to be more suited as a goal rather than as a strategy.

Table 15: Strategies Used with Videotex Advertising

	Count	Pct of Responses	Pct of Cases
Expand product knowledge	12	24	36
Information advertising format	10	20	30
Find out what works best	7	14	21
Consistent with overall advertising strategies	5	10	15
None/not available	5	10	15
Convenience/quick order fulfillment	2	4	6
Service consumer needs	2	4	6
Image advertising	2	4	6
Selective household penetration	2	4	6
Sell products without visuals	1	2	3
To gain awareness of ads in other media	1	2	3
Improve dealer relations	1	2	3
Positive alternative to current shopping patterns	1	2	3
Total responses	51	100	153

Table 16 shows the types of promotions that were used during the tests. Since the goal of sales promotions is to induce sales in the short-run, it was expected that most advertisers would use some type of promotion in their videotex advertisements. The breakdown was 62% who used promotions, while 38% chose not to employ this sales device. Interestingly, the use of electronic coupon offers was the second most popular promotion, sandwiched between premium offers and price off incentives. The surprise was that contest and sweepstakes were non-existent, although this probably can be attributed to the small scale of the tests. As was mentioned in chapter III, contests and sweepstakes were the third most accessed items on Prestel.

The claimed value of videotex is to allow users to access information or make transactions at their convenience. Therefore, the two communication levels expected to be concentrated on would be product knowledge and product purchase. And, as shown in Table 15, informing the consumers is what advertisers want to accomplish on a videotex system. Knowing this, it was surprising to discover that two-thirds of the advertisers aimed at improving consumer awareness of their product or service. The only rationale to explain this is that advertisers were actually trying to create advertising that was consistent with that used in other media (see Table 29) and were not

Table 16:   Promotions Used in Tests

	Count	Pct of Responses	Pct of Cases
None	15	33	42
Premium offer	11	24	31
Coupons	7	16	20
Price off	6	13	17
Free delivery	2	4	6
Refund	2	4	6
Special event	2	4	6
Total responses	45	100	125

Table 17:   Communication Level Aimed For

	Count	Pct of Responses	Pct of Cases
Product awareness	23	32	68
Knowledge	18	25	53
Liking	4	6	12
Preference	5	7	15
Conviction	2	3	6
Purchase	17	23	50
Attitude change	2	3	6
Other	2	3	6
Total responses	73	100	216

ready to experiment with advertising created specifically for videotex. As has been mentioned, teletext would be a medium used to gain awareness, while viewdata would be better suited for increasing product knowledge.

The overall impression of the responses to Question 17 (see Appendix) is that advertisers were using videotex to accomplish the goals that the technology adapts itself best for (see Table 17). Namely, advertising which better informs consumers about a product or service and then, with the necessary knowledge about a product or product category, prompts the actual purchase behavior. The key will be in discovering what is the correct amount and type of knowledge to be used in the videotex frames that will give consumers the confidence to immediately purchase a product. This information might include product uses, safety tips, ingredients, time schedules, guarantee or warranty facts, comparisons with competitive products, company background or testimonials.

Two factors system operators would be interested in knowing about advertisers is the control advertisers desire (Table 18) and the improvements necessary to get advertisers to allocate a portion of their budget to an operational system (Table 19). Basically, advertisers wanted to be able to instantly update their advertisements, control their

Table 18: Control Over System Wanted by Advertiser

	Count	Pct of Responses	Pct of Cases
Do not know	10	24	31
Instant updating	8	19	25
Of database input	5	12	16
Of page access and demographic data	5	12	16
Direct interface with company computer	5	12	16
Of creative and editorial content	3	7	9
Greater flexibility	3	7	9
Of hardware and software	2	5	6
Greater understanding of medium	1	2	3
Total responses	42	100	131

input into a system, know the demographics of their audience (or of the system) and have the system directly interface with their own computers. The interesting response was that advertisers wanted to control their input into the system. The reasoning may be that with input control, advertisers could instantly launch a new videotex campaign anywhere in the U.S. without revealing their strategies to their competitors. The implementation of instant updating and input control (and a significant percentage of the population on-line) could make marketing tactics very spontaneous and aggressive.

The improvements advertisers want are geared toward two distinct areas. The first concern was with the successful introduction of videotex. The top two responses were for a mass market (see Table 36) and for a proven high usage level. Many of the other responses would be taken care of given a mass market: lower costs, increased transactional and gateway capabilities and an enlarged frame base. There was also a desire for improvements in the technology; 14% of the respondents wanted photographic capabilities and improved graphics. Other concerns requiring technological advancement included quicker accessibility of information, better system security and a means for faster, inexpensive frame creation.

Table 19:   System Improvements Wanted by IP

	Count	Pct of Responses	Pct of Cases
Mass market--greater reach	12	20	34
Do not know	12	20	34
High usage level/proven medium	8	13	23
Photographic capability	5	8	14
Improved graphics	5	8	14
Become more compatible with human habits and usage	3	5	9
A fee structure	3	5	9
Lower costs/efficient cost per order	2	3	6
Make shopping easier and quicker	2	3	6
Quicker accessibility of information	2	3	6
Increased transactional and gateway capabilities	2	3	6
Security	1	2	3
Faster inexpensive frame creation	1	2	3
Be more like catalogs	1	2	3
Enlarged frame base	1	2	3
Total responses	60	100	173

The strategy behind Question 20 (see Appendix) was to make more sense of the goals advertisers had set for their experimentation. Obviously, many of the respondents gave vague answers to their companies goals. However, by looking at the types of results advertisers were planning to evaluate their findings by, it is possible to hypothesize about the true goals of the advertisers. When comparing Table 14 with Table 20, we find some contradictory responses. The seventeen "none" responses in Table 20 would appear to be a measure of the actual number of advertisers whose goal is strictly experimental. The rest, while experimenting with videotex, have a set objective that will be used to evaluate the value of the technology. There are two ways in which advertisers were evaluating their findings. One was by response (number of responses per thousand, number of times frame was accessed, time of access and relative category jumping) and the other was by sales transacted via videotex (number of transactions, size of sales and type of product sold). So, while many of the advertisers considered their use of videotex to be strictly experimental, the main focus of their experimentation was to discover what elements created the most frame traffic and sales.

Of the 39 usable surveys, 64% of the respondents claimed that their company was involved with cable TV

Table 20:   Quantifiable Results Desired

	Count	Pct of Responses	Pct of Cases
None	17	45	53
Number of responses	10	26	31
Number of sales	5	13	16
Number of times and times of access	2	5	6
Relative category jumping	1	3	3
Size of sales	1	3	3
Type of products sold	1	3	3
Acceptance of information provided as being understood by consumer	1	3	3
Total responses	38	100	118

Table 21:   Advertiser's Involvement in Other New Media

	Count	Pct of Responses	Pct of Cases
Cable	25	71	96
Videodisc/tape	5	14	19
Satellite TV	3	9	12
DBS	1	3	4
Low power TV	1	3	4
Total responses	35	100	135

advertising or 81% of the national or regional advertiser. There was also a small segment of the survey respondents whose companies were involved in exploring videodisc or videotape as viable sales media for their products. It is felt that the advertisers who will be the innovators in the videotex technology are the same companies pioneering advertising in cable and the other new electronic media.

Table 22 and Table 23 indicate the type of advertisers who responded to the survey. A total of 12 were in a service industry, 14 sold nondurable products either at the wholesale or retail level, 10 sold durable products, two had services and nondurable products to offer and one dealt in all three categories. Overall, this is a good distribution of advertisers. The emphasis on experimentation is by national advertisers, and the survey bares this out.

In general, participation by national advertisers was initiated by their advertising agencies, though the agencies recommending involvement was limited to a couple select major agencies. The interesting fact is that plans for videotex advertising were skewed towards the local emphasis. This may be due to the fact that videotex penetration in the introductory stage is expected to be scattered among numerous ideally suited communities, or that videotex is to be considered in the test market stage for a

Table 22:   Type of Product Advertised on Videotex

	Count	Pct of Responses	Pct of Cases
Service	12	31	31
Product/nondurable	14	36	36
Product/durable	10	26	26
Service and durable product	2	5	5
All three	1	3	3
Total responses	39	100	100

Table 23:   Type of Advertiser

	Count	Pct of Responses	Pct of Cases
National	28	72	72
Local	8	21	21
Regional	3	8	8
Total responses	39	100	100

Table 24:   If Participation was Recommended by Agency

	Count	Pct of Responses	Pct of Cases
Yes	19	51	51
No	18	49	49
Total responses	37	100	100

Table 25:   Geographic Plans to use Videotex

	Count	Pct of Responses	Pct of Cases
National	12	32	32
Local	15	41	41
Regional	2	5	5
Do not know	6	16	16
All three	2	5	5
Total responses	37	100	100

Table 26:   Number of Months Involved with Videotex

Months	Count	Pct of Responses	Pct of Cases
1 to 3	17	46	46
4 to 12	7	19	19
12 to 18	6	16	16
Over 18	7	19	19
Total responses	37	100	100

number of years, and therefore, not worth the effort necessary to create and monitor a national campaign.

The distribution of months involved in videotex by the respondents is shown in Table 26. The mean average time involved in videotex experimentation is nine months—a relatively short time for any of the advertisers to uncover the strengths, possibilities and potentials of the technology.

Questions 13 (image portrayal), 15 (co-op advertising) and 16 (creative design similar) were asked in an attempt to further uncover advertisers videotex strategies. Interestingly enough, there was a even break between advertisers showing and not showing prices. Even more interesting is that the 17 respondents who said they were interested in affecting the purchase decision (Table 17) were not always the same respondents using prices in their ads. Where the discrepancies lie is not known: either the data is faulty or some of the advertisers were missing on their sales pitch. Very few people make purchases without knowing the price to be paid.

Advertisers may also be missing their mark by passing up the potential for co-op advertising. If local marketing is the prime focus of a campaign, then it only makes sense

Table 27: Were Prices Shown in Advertising?

	Count	Pct of Responses	Pct of Cases
Yes	17	47	47
No	19	53	53
Total responses	36	100	100

Table 28: Will Co-op Advertising be Used?

	Count	Pct of Responses	Pct of Cases
Yes	7	21	21
No	23	68	68
Do not know	4	12	12
Total responses	34	100	100

Table 29: Are Ads Similar to Other Media?

	Count	Pct of Responses	Pct of Cases
Yes	21	58	58
No	15	42	42
Total responses	36	100	100

to include a listing of the dealers where consumers can buy the product. Or, are manufacturers more interested in gaining the higher profit margins obtainable through direct marketing sales? In either case, the advertising used on the videotex systems was similar to that used in other media in 58% of the cases. The point here is that 42% of the advertisers were experimenting with a totally new concept for videotex advertising, which given the capabilities of the technology (e.g. direct sales potential, potential for providing unlimited amounts of information if necessary) is understandable. So, the reason co-op was not an alternative being evaluated for videotex advertising may actually be because marketers were looking to maximize their advertising dollars through direct sales.

In Table 19, only three of the respondents indicated a desire to have a fee structure set up. However, the nature of the advertising business is such that this will be a requirement once system operators begin charging advertisers for the priviledge of using videotex frames to sell their products. Table 30, 31 and 32 addressed the desires of the advertisers in regards to a suitable pricing scheme. Unfortunately, the responses left the issue unsettled. The one fact that did come out was that if a CPM charge was levied, it had better be under $10.00. Pricing is probably the least settled area currently under evaluation by system

Table 30: Pricing Scheme Desired by Advertiser

	Count	Pct of Responses	Pct of Cases
CPM + per frame	7	23	23
CPM	5	16	16
Flat fee	4	13	13
Flat fee + CPM	4	13	13
Per frame	1	3	3
Other	3	10	10
Do not know	7	23	23
Total responses	31	100	100

Table 31: CPM Price Range Desired

	Count	Pct of Responses	Pct of Cases
Under $10.00	7	78	78
$10.00 - $20.00	1	11	11
$51.00 - $75.00	1	11	11
Total responses	9	100	100

Table 32:   Per Frame Charge Desired

	Count	Pct of Responses	Pct of Cases
Under $150.00	2	50	50
$150.00 - $450.00	1	25	25
$451.00 - $750.00	1	25	25
Total responses	4	100	100

Table 33:   Percent of 1982 Budget Allocated to Videotex

	Count	Pct of Responses	Pct of Cases
Less than .50%	19	63	63
Do not know	9	30	30
Not an alternative	1	3	3
Not part of budget	1	3	3
Total responses	30	100	100

operators and advertisers alike. The key will be in establishing a formula that pays a given percentage of the operating costs, while providing substantial value and incentive to advertisers to encourage greater use of the technology to sell their wares and to attract other less progressive advertisers to the medium.

Table 33, 34 and 35 show the estimated percent of budget that advertisers plan to allocate to videotex in the years 1982, 1985 and 1990 respectively. As expected, the number of "do not know" responses increased the further ahead projections had to be made. It had been anticipated that many of the advertisers evaluating videotex had not made any long-range plans for the technology at this early stage. Yet, the positive side of the responses was that advertisers fully expect to be increasing their budget allocations over the next seven years, though this may be based on the assumptions that penetration levels will increase proportionally over those years. Moreover, over 20% of the respondents fully expect to be allocating at least 1% of their advertising budget by 1990.

Table 36 shows the penetration levels that advertisers expected videotex to reach before considering it to be a viable medium. With 30% of the responses (59% of responses other than "do not know") requiring a penetration level

Table 34: Percent of 1985 Budget to be Spent on Videotex

	Count	Pct of Responses	Pct of Cases
Less than .50%	6	19	19
.05 - .99%	2	6	7
1.0 - 4.99%	3	10	10
Do not know	17	55	55
Not an alternative	2	7	7
Not part of budget	1	3	3
Total responses	31	100	100

Table 35: Percent of 1990 Budget to be Spent on Videotex

	Count	Pct of Responses	Pct of Cases
Less than .50%	2	7	7
.05 - .99%	2	7	7
1.0 - 4.99%	2	7	7
5.0 - 9.99%	3	10	10
10.0 - 20.0%	1	3	3
Do not know	20	65	65
Not part of budget	1	3	3
Total responses	31	100	100

Table 36: Penetration Level Desired by Advertiser

	Count	Pct of Responses	Pct of Cases
1.0 - 4.99%	1	3	3
5.0 - 9.99%	2	6	6
10.0 - 20.0%	4	12	12
Greater than 20.0%	10	30	30
Do not know	16	49	49
Total responses	33	100	100

Table 37: Advertiser's Plans for Videotex

	Count	Pct of Responses	Pct of Cases
More experimentation	25	71	71
Do not know	7	20	20
None	2	6	6
Greater use	1	3	3
Total responses	35	100	100

greater than 20%, it is possible that the usual 30% penetration figure required by new technologies will need to be reached before videotex is considered a viable marketing and advertising medium. Until videotex reaches a penetration level acceptable to advertisers, any involvement in the medium may be considered to be experimental. This may explain why 71% of the respondents planned to do more experimentation with videotex, while only one advertiser committed to using videotex more in their advertising plans. Still, initial subscribers should represent the upscale target market marketers like to reach.

Table 38 exhibits the responses advertisers had when asked to evaluate their satisfaction with their advertising agencies knowledge about videotex. The mean of the twenty-one cases was 5.9, but the interesting result was that some of the major advertisers confidentially said that they were dissatisfied with the work their agencies had done with videotex.

The Results: Two-Way Frequency Distributions

Two-way frequency distributions by product type and by

Table 38: Satisfaction of Agency Knowledge with Videotex

Scale	Count	Pct of Responses	Pct of Cases
1 Very Dissatisfied	0	0	0
2	2	9.5	9.5
3	3	14.3	14.3
4	1	4.8	4.8
5	4	19.0	19.0
6	2	9.5	9.5
7	3	14.3	14.3
8	2	9.5	9.5
9	2	9.5	9.5
10 Very Satisfied	2	9.5	9.5
Total responses	21	100.0	100.0

Mean = 5.905
Range = 8

type of service offered were run for appropriate questions. The major limitation of two-way frequency tables is that the number of responses in any one frame becomes very small. Again, it should be reiterated that the idea behind this survey was to set a foundation on which others could expand from; and hopefully the results and the following analysis will stimulate debate and further analysis on the needs of advertisers.

Table 39 provides the breakdown of services offered by product type. For companies in the service industry the emphasis on videotex appeared to be towards informing the consumers about their service, though it is interesting to note that five of the respondents attempted to sell their service over the videotex system. Durable products made up 45% of the transaction services attempted, possibly indicating that durable products were easier to sell and distribute directly to the consumer. Advertisers of non-durables, like services, appeared to emphasize communication goals over sales, though seven advertisers attempted to sell their products directly to the consumers via the videotex system.

Interestingly, Table 40 shows that service advertisers were split between selling locally and nationally. The implication was that various services can be sold on a

Table 39:   Service Offered by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Information Access	10 42 38 13	7 25 27 9	9 38 35 11	26 33
Transaction Services	5 21 23 6	10 36 45 13	7 29 32 9	22 28
Information Processing		1 4 50 1	1 4 50 1	2 3
Communicate Services	1 4 25 1	1 4 25 1	2 8 50 3	4 5
Straight Advertising	7 29 28 9	9 32 36 11	9 38 36 11	25 31
None	1 4 100 1			1 1
Column Total	24 30	28 35	28 35	80 100

Table 40:   Geographic Plans by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Locally	6 43 35 15	7 54 41 17	4 29 24 10	17 41
Regionally	1 7 50 2		1 7 50 2	2 5
Nationally	6 43 43 15	3 23 21 7	5 36 36 12	14 34
Do Not Know	1 7 17 2	3 23 50 7	2 14 33 2	6 15
All Three			2 14 100 5	2 5
Column Total	14 34	13 32	14 34	41 100

national basis if consumers know about the company. This provides a way for a company to grow without increasing in physical size (e.g. banks, publishers) or to set up satellite operations in select communities where business is best (e.g. pest control businesses, travel agents, retailers). The fact that advertisers of durable products slanted their plans towards local marketing indicates that a great potential for co-op advertising exists. This might be one area on which system operators will want to sell their service to hardware manufacturers. With regional and national interests in videotex totaling 39%, the possibility of regional and national gateways (videotex interconnects) with the sole purpose of supplying advertising to systems, while maximizing buying convenience for advertisers, becomes a possibility.

Tables 41 to 45 breakdown the target market of the various advertisers by their product line. For services, the average target market they advertised to were individuals aged 25 to 65 who make over $25,000 per year in a white collar or professional occupation, have at least some college experience and who live in a major city or its suburbs. For videotex advertisers of durable products, their target market demographics were individuals 18 to 65 who earn over $25,000 per year and have at least a high school diploma and currently live in the suburbs. Table 43

Table 41:   Target Market Age by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Under 18			1 5 100 2	1 1
18 to 24	2 11 20 3	4 19 40 7	4 19 40 7	10 15
25 to 44	8 42 29 13	11 52 39 18	9 43 32 15	28 41
45 to 65	8 42 44 13	5 24 28 8	5 24 28 8	18 26
Over 65	1 5 25 2	1 5 25 2	2 10 50 3	4 6
Column Total	19 28	21 31	21 31	61 100

Table 42:   Target Market Income by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Under $10,000	1 5 50 2		1 4 50 2	2 3
$10,000 to $14,999		1 6 33 2	2 8 67 3	3 5
$15,000 to $24,999	1 5 11 2	2 13 22 3	6 25 67 10	9 15
$25,000 to $49,999	8 42 35 13	8 50 35 13	7 29 30 12	23 38
Over $50,000	9 47 41 15	5 31 23 8	8 33 36 13	22 37
Column Total	19 32	16 27	24 40	60 100

Table 43:   Target Market Profession by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Housewife	5 17 26 5	6 19 32 6	8 25 42 9	19 20
Blue Collar	3 10 21 3	5 16 36 5	6 19 42 6	14 15
White Collar	8 27 32 9	9 29 36 10	8 25 32 9	25 27
Professional	13 43 42 14	10 32 32 11	8 25 26 9	31 33
Other	1 3 25 1	1 3 25 1	2 6 50 2	4 4
Column Total	30 32	31 33	32 34	93 100

Table 44:   Target Market Education Level by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Elementary or Less	2 7 40 3	1 4 20 1	2 8 40 3	5 6
Some High School	2 7 40 4	1 4 20 1	2 8 40 3	5 6
High School Graduate	3 11 21 4	5 19 36 6	6 23 43 8	14 18
Some College	7 26 37 9	6 22 32 8	6 23 32 8	19 24
College Graduate	9 33 35 11	10 37 38 13	7 27 27 9	26 33
Graduate Student	4 15 36 5	4 15 36 5	3 12 27 4	11 14
Column Total	27 34	27 34	26 32	80 100

Table 45: Target Market Location by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Major City	9 26 38 10	6 21 25 7	9 30 38 10	24 27
Suburbs	11 31 33 12	12 43 36 13	10 33 30 11	33 37
Small Town	5 14 31 6	5 18 31 6	6 20 38 7	16 18
Rural Area	6 17 38 7	5 18 31 6	5 17 31 6	16 18
Column Total	31 35	28 31	30 34	89 100

indicates that advertisers of durable and non-durable products had no real preference to their customers' occupation. The specifics of non-durable product advertisers' target market are individuals 18 to 65 with incomes over $15,000, a high school education and now live in either a major city or its suburbs. Again, the next task is to compare these demographics with those associated with videotex users to determine which manufacturers are the prime candidates for advertising on a videotex system.

The strategies of expanding consumers' knowledge about a product or service and using an informative advertisement format dominanted the thinking of service and non-durable product organizations (Table 46). However, durable product advertisers experimented with a range of different strategies; the most provocative strategies were to sell without the aid of visuals, servicing customer needs and improving dealer relations. What is needed is a detailed description of just how advertisers are going about meeting these strategies. This can be accomplished with further investigation.

In analyzing the data in Table 47, the fact that three service organizations made no attempt to create an image stands out. It would seem that what differentiates one service company from its competitors is its image; yet, a

Table 46:   Advertising Strategies by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Expand Product Knowledge	5 24 38 8	3 18 23 5	5 24 38 8	13 22
Find What Works Best	4 19 36 7	3 18 27 5	4 19 36 7	11 19
None N/A	3 14 60 5	1 6 20 2	1 5 20 2	5 8
Sell Products Without Visuals		1 6 100 2		1 2
Informative Ad Format	4 19 40 7	1 6 10 2	5 24 50 8	10 17
Convenience-Quick Order Taking		1 6 50 2	1 5 50 2	2 3
Service Consumer Needs	1 5 50 2	1 6 50 2		2 3
Consistent With Adv. Strategies Overall	1 5 17 2	3 18 50 5	2 10 33 3	6 10
Image Advertising			2 10 100 3	2 3

Table 46 continued

Selective Household Penetration	1 5 50 2	1 6 50 2		2 3
To Gain Awareness For Ads In Other Media	1 5 100 2			1 2
Improve Dealer Relations		1 6 100 2		1 2
A Positive Alternative To Shopping Patterns	1 5 33 2	1 6 33 2	1 5 33 2	1 2
Column Total	21 36	17 29	21 36	59 100

couple of the service advertisers appeared to take a "yellow pages" approach to videotex. They listed their availability and service, but nothing more. A majority of the advertisers tried to at least keep up their established image from advertisements on other media. Kudos go to the non-durable product advertiser who experimented with creating a specific videotex image for his product.

As for prices being shown, non-durable product advertisers did not list their prices by a margin of almost two-to-one. Both service and durable product advertisers were more apt to show their prices than not, but the difference cannot be considered significant. What is necessary is to evaluate the use of price by product line, which was not done in this survey.

Table 49 shows that for each of the three classifications, premium offers were the most used. Price off and coupon promotions were the second most used promotions for durables, while couponing was second to premiums in the non-durable classification. Unfortunately, no results were available at the time of the survey as to the success of each promotion.

With premium offers and coupons being the two top promotions used by durable product advertisers, again the

Table 47: Image Portrayed by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
No Attempt to Create an Image	3 21 38 8	1 8 13 3	4 29 50 10	8 20
Consistent With Other Media	11 79 35 28	11 92 35 28	9 64 29 23	31 78
Other			1 7 100 3	1 3
Column Total	14 35	12 30	14 35	40 100

Table 48: If Prices Were Shown by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Yes	7 54 37 18	7 54 37 18	5 36 26 13	19 48
No	6 46 29 15	6 46 29 15	9 64 43 23	21 53
Column Total	13 33	13 33	14 33	40 100

Table 49:   Promotions Used by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
None	8 53 50 16	4 21 25 8	4 25 25 8	16 32
Free Delivery	1 7 25 2	1 5 25 2	2 13 50 4	4 8
Coupons	1 7 13 2	3 16 38 6	4 25 50 8	8 16
Refund	1 7 50 2	1 5 50 2		2 4
Price Off	2 13 29 4	4 21 57 8	1 6 14 2	7 14
Special Event		2 11 100 4		2 4
Premium Offer	2 13 18 4	4 21 36 8	5 31 45 10	11 22
Column Total	15 30	19 38	16 32	50 100

opportunity for co-op advertising exists. What better way to create greater short-run sales, while improving dealer relations, than combining a promotion with a co-op arrangement. Table 50 shows that durable product advertisers were most apt to use co-op programs. The possibilities are endless, but the value is obvious. Customers are pulled into a dealers store to buy the durable advertiser's product and take advantage of the promotional offer; a habit both the retailer and the manufacturer want the customer to establish.

Table 51 shows that durable product and service oriented advertisers were more likely to use similar advertising to that used in other media with their videotex advertising. Advertisers of non-durable products were split between using similar styles of advertising on videotex. The positive note is that 38% of the respondents were experimenting with advertisements not similar to those used in other media, advertisements which could be specifically designed to take advantage of the benefits of videotex. If this is the case, it would be a good bet that the reason for this trend of designing a specific videotex advertising format is due to the transactional capabilities of the technology.

It is well recognized in the advertising business that

Table 50:   Co-op Advertising (to be) Used by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Yes	2 17 29 6	4 33 57 11	1 8 14 3	7 19
No	6 50 25 17	7 58 29 19	11 92 46 31	24 67
Do Not Know	4 33 80 11	1 8 20 3		5 14
Column Total	12 33	12 33	12 33	36 100

Table 51:   Similar Advertising by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Yes	10 71 40 25	8 62 32 20	7 54 28 18	25 63
No	4 29 27 10	5 38 33 13	6 46 40 15	15 38
Column Total	14 35	13 33	13 33	40 100

non-durable (packaged goods) advertising is a more advanced science then that of durable products advertising and also of service advertising. This may be the reason why 12 service organizations, 10 durable product advertisers and only 5 non-durable product advertisers chose awareness as the communication level they were attempting to impact with their videotex advertising. The reason behind these choices are unknown. In most cases, a videotex user will have to know something about the product in order to access information about it, so it is wasteful to try to gain awareness for a product via videotex; the exceptions to gaining awareness being if the product's advertising is used to sponsor some videotex service, ads on teletext or if the user is browsing through a catalog of a specific manufacturer. Of course, similar proportions to those above occurred by product classification for knowledge level responses and purchase level responses.

Table 53 gives the distribution of quantifiable results used by various advertisers to evaluate their experimentation. The fact that stands out the most is that 50% of the respondents went into the videotex tests without some pre-set goals. This means that either advertisers were entering the experimention with an open mind or they were unprepared to examine the values of videotex on a professional level.

Table 52: Communication Level by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Awareness	12 34 44 14	10 37 37 12	5 24 19 6	27 33
Knowledge	9 26 43 11	7 26 33 8	5 24 24 6	21 25
Liking	3 9 75 4		1 5 25 1	4 5
Preference	1 3 20 1	1 4 20 1	3 14 60 4	5 6
Conviction	2 6 100 2			2 2
Purchase	7 20 35 8	8 30 40 10	5 24 25 6	20 24
Attitude Change	1 3 50 1		1 5 50 1	2 2
Other		1 4 50 1	1 5 50 1	2 2
Column Total	35 42	27 33	21 25	83 100

182

Table 53:   Quantifiable Results by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
None	8 73 38 19	8 53 38 19	5 31 24 12	21 50
Number of Responses	2 18 20 5	3 20 30 7	5 31 50 12	10 24
Number of Times Viewed and Times of Viewing		1 7 50 2	1 6 50 2	2 5
Relative Category Jumping		1 7 100 2		1 2
Number of Sales		2 13 40 5	3 19 60 7	5 12
Size of Sales			1 6 100 2	1 2
Products Sold			1 6 100 2	1 2
Knowledge of Information Input is Understood	1 9 100 2			1 2
Column Total	11 26	15 36	16 38	42 100

Table 54 to 56 shows the expected advertising budget allocation for videotex by the advertisers. As mentioned before, it is encouraging to see that advertisers were expecting to increase their allocation over the next seven years, in one case all the way up to 10% or more of their advertising budget. Another interesting item in Table 56 is that none of the respondents indicated that videotex would "not be an alternative" in 1990.

The breakdown by product classification for the advertisers' desired penetration level is shown in Table 57. Videotex penetration levels may not be as important as the demographics of its users, still most advertisers (35%) indicated a desire for penetration levels to exceed at least 20%. Whether this is the true level required to validate videotex's emergence as a viable medium will require extra investigation. With the sales potential of videotex, it is possible that manufacturers will gladly settle for a lower penetration in exchange for proof that videotex advertising increases their sales and profit margins.

The limitation of the data in Table 58 is that there was no indication of how long advertisers had been involved in other new electronic media. With cable penetration levels now past the 30% barrier, some of the advertisers

Table 54:   Percent of 1982 Budget by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Less Than .50%	6 55 29 18	7 64 33 21	8 67 38 13	21 62
Not an Alternative	1 9 100 3			1 3
Do Not Know	4 36 36 12	4 36 36 12	3 25 27 9	11 32
Not Part of Budget			1 8 100 3	1 3
Column Total	11 32	11 32	12 35	34 100

Table 55:   Percent of 1985 Budget by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Less Than .50%	4 36 57 11	3 25 43 9		7 20
.50% to .99%	1 9 50 3		1 8 50 3	2 6
1.0% to 4.99%	1 9 25 3	2 17 50 6	1 8 25 3	4 11
Not an Alternative		1 8 50 3	1 8 50 3	2 6
Do Not Know	5 45 26 14	6 50 32 17	8 67 42 23	19 54
Not Part of Budget			1 8 100 3	1 3
Column Total	11 31	12 34	12 34	35 100

Table 56:   Percent of 1990 Budget by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Less Than .50%	1 9 50 3	1 8 50 3		2 6
.50% to .99%	1 9 50 3	1 8 50 3		2 6
1.0% to 4.99%	1 9 50 3		1 8 50 3	2 6
5.0% to 9.99%	2 18 50 6	1 8 25 3	1 8 25 3	4 11
10.0% to 20.0%		1 8 100 3		1 3
Do Not Know	6 55 26 17	8 67 35 23	9 75 39 26	23 66
Not Part of Budget			1 8 100 3	1 3
Column Total	11 31	12 31	12 34	35 100

Table 57:   Penetration Wanted by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
1.0% to 4.99%			1 8 100 3	1 3
5.0% to 9.99%	2 15 100 5			2 5
10.0% to 20.0%	1 8 20 3	2 25 60 8	1 8 20 3	5 14
Over 20.0%	5 38 38 14	4 33 31 11	4 33 31 11	13 35
Do Not Know	5 38 31 14	5 42 31 14	6 50 38 16	16 43
Column Total	13 35	12 32	12 32	37 100

could have added cable advertising in the past year and therefore should not be considered innovators in this medium. However, the advertisers experimenting with satellite TV, videodisc/videotape, DBS and low power TV would definitely be considered innovators. The fact that three advertisers of durable products were interested in videodisc/videotape as a selling tool meant that retailers were looking for alternative ways to sell their wares to customers.

Table 59 breaks down the advertisers' geographic plans by the type of service offered. There are no real differences in the type of service offered either locally or nationally. Therefore, it is safe to assume that a gateway specifically designed to meet the needs of advertisers can be successful as long as information access, transactional services and straight advertising can be accomplished efficiently.

Table 60 shows just how much experimenting is going on in the videotex tests. Advertisers were trying many different strategies to find out which ones would generate the most business for them. It was interesting to see that advertisers were experimenting with many different tactics in the two classifications they probably had the least experience in: transactional services and providing

Table 58:   Involvement in Other Media by Product Type

Count Column Pct Row Pct Tab Pct	Service	Durable Product	Non Durable Product	Row Total
Cable	9 64 31 21	10 59 34 23	10 83 34 23	29 67
Satellite TV	1 7 25 2	1 12 50 5	1 8 25 2	4 9
Videodisc/ Videotape	2 14 29 5	4 24 57 9	1 8 14 2	7 16
DBS	1 4 50 2	1 4 50 2		1 5
Low Power TV	1 7 100 2			1 2
Column Total	14 33	17 40	12 28	43 100

Table 59: Geographic Plans by Services Offered

Count* Column Pct Row Pct Tab Pct	Informa Access	Transac Service	Informa Process	Communi Service	Plain Adver	Row Total
Locally	8 34.8 29.6 11.9	8 44.4 29.6 11.9	1 50.0 3.7 1.5		10 47.6 37.0 14.9	13 40.3
Regionally	2 8.7 66.7 3.0				1 4.8 33.3 1.5	3 4.5
Nationally	9 39.1 36.0 13.4	7 38.9 28.0 10.4	1 50.0 4.0 1.5	1 50.0 4.0 1.5	6 28.6 24.0 9.0	25 37.3
Do Not Know	4 17.4 40.0 6.0	2 11.1 20.0 3.0		1 50.0 10.0 1.5	3 14.3 30.0 4.5	10 14.9
All Three		1 5.6 50.0 1.5			1 4.8 50.0 1.5	2 3.0
Column Total	23 34.3	18 26.9	2 3.0	2 3.0	21 31.3	67 100.0

*National total includes one non-service response.

Table 60:   Advertising Strategies by Services Offered

Count* Column Pct Row Pct Tab Pct	Informa Access	Transac Service	Informa Process	Communi Service	Plain Adver	Row Total
Expand Product Knowledge	7 20.6 28.0 6.9	9 31.0 36.0 8.9	1 25.0 4.0 1.0		7 25.0 28.0 6.9	25 24.8
Find What Works Best	6 17.6 35.3 5.9	4 13.8 23.5 4.0		2 50.0 11.8 2.0	5 17.9 29.4 5.0	17 16.8
None N/A	3 8.8 50.0 3.0	1 3.4 16.7 1.0			2 7.1 33.3 2.0	6 5.9
Sell Products Without Visuals		1 3.4 100.0 1.0				1 1.0
Informative Ad Format	9 26.5 42.9 8.9	5 17.2 23.8 5.0		1 25.0 4.8 1.0	6 21.4 28.6 5.9	21 20.8
Convenience- Quick Order Taking	2 5.9 40.0 2.0	2 6.9 40.0 2.0	1 25.0 20.0 1.0			5 5.0
Service Consumer Needs	1 2.9 25.0 1.0	1 3.4 25.0 1.0	1 25.0 25.0 1.0			4 4.0
Consistent With Adv. Strategies Overall	5 14.7 50.0 5.0	2 6.9 20.0 2.0			3 10.7 30.0 3.0	10 9.9
Image Advertising		1 3.4 50.0 1.0	1 25.0 50.0 1.0			2 2.0

Table 60 continued

Selective Household Penetration		1 3.4 33.3 1.0			2 7.1 66.7 2.0	3 3.0
To Gain Awareness For Ads In Other Media					1 3.6 100.0 1.0	1 1.0
Improve Dealer Relations		1 3.4 50.0 1.0			1 3.6 50.0 1.0	2 2.0
A Positive Alternative To Shopping Patterns	1 2.9 25.0 1.0	1 3.4 25.0 1.0		1 25.0 25.0 1.0	1 3.6 25.0 1.0	4 4.0
Column Total	34 33.7	25 28.7	4 4.0	4 4.0	28 27.7	101 100.0

*Expand product knowledge and service consumer needs each have one non-service response.

unlimited information to customers. Any experience in the field of direct marketing would probably be a valuable asset in developing the proper strategies to make transactional services successful for advertisers. As for information access service, advertisers need to find out the correct amount of information needed to sell their product, while being cost efficient at the same time.

The last table, Table 61, looks at what communication level advertisers attempted to affect with each particular service. With information access services, the greatest emphasis was on gaining awareness and increasing the consumers knowledge of products or services. For transactional services, the stress was on gaining awareness and inducing purchase. For those advertisers placing straight advertising on the videotex system, gaining awareness was the most important level to affect.

Table 61: Communication Level by Services Offered

Count* Column Pct Row Pct Tab Pct	Informa Access	Transac Service	Informa Process	Communi Service	Plain Adver	Row Total
Awareness	18 34.0 38.3 13.2	11 34.4 23.4 8.1	2 28.6 4.3 1.5	2 50.0 4.3 1.5	14 37.8 29.8 10.3	47 34.6
Knowledge	16 30.2 47.1 11.8	6 18.8 17.6 4.4	1 14.3 2.9 .7	1 25.0 2.9 .7	9 24.3 26.5 6.6	34 25.0
Liking	4 7.5 57.1 2.9	1 3.1 14.3 .7			2 5.4 28.6 1.5	7 5.1
Preference	3 5.7 37.5 2.2	1 3.1 12.5 .7	2 28.6 25.0 1.5		1 2.7 12.5 .7	8 5.9
Conviction	2 3.8 40.0 1.5	2 6.3 40.0 1.5			1 2.7 20.0 .7	5 3.7
Purchase	8 15.1 27.6 5.9	10 31.3 34.5 7.4	2 28.6 6.9 1.5	1 25.0 3.4 .7	7 18.9 24.1 5.1	29 21.3
Attitude Change	2 3.8 66.7 1.5				1 2.7 33.3 5.1	3 2.2
Other		1 3.1 33.3 .7			2 5.4 66.7 1.5	3 2.2
Column Total	53 39.0	32 23.5	7 5.1	4 2.9	37 27.2	136 100.0

*Knowledge, preference and purchase have one non-service response.

Chapter VI

SUMMARY AND CONCLUSIONS

In the initial stages of the thesis two objectives were set: to evaluate the needs and opportunities of advertisers who will undoubtedly be responsible for supporting videotex when it becomes a viable communication medium and to put together a review of the present videotex situation. The survey accomplished this first objective and has provided a foundation for others to work from. The review of the present day situation was the result of secondary research from the work of many individuals involved in the field of videotex.

From the results of the survey, it can be surmised that advertisers will be experimenting with the technology for many years to come. The major services advertisers were experimenting with were information access, straight advertising and transactional capabilities, which are the three services that advertisers would be expected to provide. These services can accomplish the three basic

195

marketing goals, which were also the three attributes advertisers liked the most about videotex: providing information to consumers, selling the product (transactional capability) and the interactive potential (post-sale follow up). Moreover, advertiser strategies were designed to increase a user's knowledge and awareness of their product or service, along with creating an atmosphere that would prompt impulse buying.

By evaluating the target market of the products advertised on videotex, it was apparent that advertisers were expecting to market to an upscale audience. However, it was interesting to note that even with a segmentable upscale market, advertisers were consistent in the product image they portrayed in their ads. Few tried to create advertisements specifically aimed at the upscale videotex user. It will be necessary for each advertiser to evaluate the opportunities videotex offers in relation to their own objectives, goals and strategies.

Videotex will be judged on its effectiveness in conveying the intended message and as a sales tool. Advertisers will also look at the audience demographics of videotex and at the technology's ability to reach a mass market with a suitable frequency. The current experimentation should be used to discover the most

effective frequency and the effect of wearout on videotex advertising. It might also be important to know which product and service categories require more information than can be provided through traditional advertising media.

For now, advertisers are waiting for videotex to reach a mass market (penetration levels greater than 20%) and proof that it is a medium with a high usage rate. The involvement in videotex may be similar to that experienced by cable. In fact, many of the survey respondents were involved in cable advertising and with other new electronic media.

Videotex has many advantages to offer users. In fact, the benefits of videotex can be provided by other means; but, videotex will usually be a more convenient tool to use. Plus, videotex offers the benefits of many different media in one neat package.

Videotex offers advertisers many benefits too. For instance, the synergistic impact videotex should have on consumers will benefit marketers. The ability of marketers to advertise, promote, sell, test and interact with their customers will make videotex the sales tool of the future. The sales opportunity alone is incentive enough for many of the top direct marketers to get involved in the medium,

including Sears, Penney's, Fingerhut, Eddie Bauer, American Express and Publisher's Clearing House. There is also a great potential for advertiser's to sponsor various services (e.g. a sports scoreboard or an educational game) in order to attract the attention of a specific target market. Best of all, messages can be disseminated instantly and updated immediately upon request.

Another value of videotex will be in supporting products and services which require careful explanation. This can mean supplying instructions, preventions, remedies, guarantees or additional information than what is provided by advertisements and packages. Lost instructions to a product can create a very frustrating situation which will reduce the consumer's image of a product. By using a videotex system, marketers can provide this information immediately and reduce this frustrating situation, while maintaining a good image for their product in the minds of the consumer. This points out two other benefits of videotex: advertisers will be able to insert as much information as they want into a system (message length flexibility) and the information will have a long life.

The area of handling post-sale complaints and other customer dissatisfaction can be enhanced through the introduction of an interactive electronic messaging service

connecting the company ombudsman and the disgruntled customer. The value of this feedback to advertisers for new products alone could attract many advertisers. Advertisers are also well aware of the potential for videotex systems to collect market data; data better and less costly than has ever been available.

The profit margins a large videotex system will provide for banks, retailers, grocery stores and even wholesalers is reason enough for marketers to get involved with videotex. This is one reason why videotex is assured of becoming an acceptable medium to advertise on. The reasons for these higher profit margins are that videotex should be a low cost medium to use or to test market products; and through the use of videotex, distributors can lower their energy and labor costs. These profit margins can be obtained while manufacturers are strengthening relations with their dealers through co-op packages and retail tie-ins.

Finally, there is the advantage of being able to sell to an upscale target market which can easily be segmented either locally, regionally or nationally. Moreover, users will access only information that interests them; therefore, assuring a high level of frame awareness. This level of concentration will also be enhanced by the newsworthy setting videotex will provide.

On the other side of the coin are the disadvantages. To begin with, distribution problems exist due to the time lag between a videotex sale and the time of delivery and on how to handle returns and exchanges. Videotex sales will also have to deal with the problem of providing a substitute for the social interaction associated with shopping. Advertising's creative work will be limited by the technical capabilities of videotex until alphaphotographic videotex is available.

There are some present problems which will be solved as videotex matures. These include the unsettled issue of cost, the privacy and consumer protection issues, the lack of audience demographics and a mass market. The technology must also overcome a lack of awareness and knowledge people have for videotex. Advertising agencies will also want to know how they will be compensated if system operators do not go along with the traditional commission.

The most important aspect of viewdata advertising will be for products and services to already be in a consumer's evoked set. The reason for this is that users will be actively searching for information on certain brands or product lines, except in the case where advertisers sponsor a frame of information. If the user does not have a

particular brand name in mind, he most likely will not access frames on the brand. However, a user could run across a brand not in his evoked set while looking through a particular product line. Advertisers must also learn how to lead a potential customer through a system to their advertisements.

The increasing cost of television advertising means that many advertisers are looking for other media to promote their products. Videotex will be a cost effective alternative to television, or even a way to augment an overall advertising campaign. Videotex users can be directed from advertisements in other media to gain additional information about a product by accessing a given page number. This gives consumers a way to cope with mass advertising exposures by giving them the ability to select the ads they want to see; a psychological advantage that increases awareness of the advertisement's content and is pleasing to a consumer.

The focus of videotex messages must be to motivate users to make a purchase, if at all possible. Rarely does a marketer have the opportunity to make his pitch and close a sale at one time. It will also be important for ads to highlight the discernible product attributes, and on videotex more than one attribute can be focused on.

Successful advertising will need to be aimed at helping consumers fulfill significant needs, needs which would require additional information to satisfy.

So, where is the advertisers' place in the evolution of videotex? Advertising will be a key support, an accepted institution, offering a mix of old and new ideas that will help advance videotex as an information bridge between the individual and the information provider. Like other media, the diffusion of a new technology will be a function of the advertising support it gets. Videotex has many unique benefits to offer marketers and consumers by offering the benefits of many media all in one package and one day it should be as prevalent as television.

APPENDIX

Name _____ Title _____

Company Name_____

The provided information should be used only in ways not identifiable
to myself or my company.

                YES _____   NO _____

Signature _____

Directions: Most answers require only short descriptions. If
more space is needed than is provided, either use the back of the
page or another piece of paper.

1. What experimentation/media usage has your company participated
    in with regards to videotex or interactive television?

2. How many months has your company been involved with videotex?

3. Was videotex recommended by your agency?
                YES _____   NO _____

4. What type of service did you provide?
    _____   Information Access (directories, bulletin board)
    _____   Transactional Service (shopping, bank-at-home)
    _____   Information Processing (sponsorship of games, quizzes)
    _____   Communication Service (opinion polling)
    _____   Straight Advertising (as in magazines)

5. Please describe the frames (advertisements) contents, or if
    possible, provide graphic representations.

203

6. Are your company's plans for videotex aimed:

_____ Locally?

_____ Regionally?

_____ Nationally?

7. What products/services were advertised on videotex?

8. The demographic composition of your consumers for the products/services shown on videotex is typically:

AGE:		INCOME:	
under 18	____	under $10,000	____
18-24	____	10,000-14,999	____
25-44	____	15,000-24,999	____
45-65	____	25,000-49,999	____
over 65	____	50,000 plus	____

RACE:		PROFESSION:	
Caucasian	____	Housewife	____
Black	____	Blue Collar	____
Spanish	____	White Collar	____
Oriental	____	Professional	____
No Preference	____	Other	_____

SEX:		EDUCATION:	
Male	____	Elementary School or less	____
Female	____	Some High School	____
Both	____	High School Graduate	____
		Some College	____
MARRIED: YES	____	College Graduate	____
NO	____	Graduate Student or more	____

STAGE OF FAMILY LIFE CYCLE:		LIVE IN:	
No Children	____	Major City	____
Children under age 6	____	Suburbs	____
Children 6-17 only	____	Small Town	____
No Children under 18	____	Rural Area	____

9. What features of videotex are most attractive to your company? Why?

10. What marketing/advertising goals were set for videotex ?

11. What marketing/advertising strategies were used in presenting your products/services?

12. How was your company's image portrayed?
    a. No attempt to create an image was made ____
    b. Consistent with portrayal in other media ____
    c. Other (please explain)

13. Were product/service prices listed? YES ____ NO ____

14. Were any promotions involved? YES ____ NO ____
    If yes, what type of promotion?
        ____ Coupon   ____ Premium Offer
        ____ Refund   ____ Contest/Sweepstake
        ____ Price Off   ____ Trade Premium
        ____ Special Event

15. Is co-op advertising part of your company's plan for videotex?
        YES ____ NO ____

16. Was the videotex advertising designed to be similar to the advertising used in other media? (please elaborate)
        YES ____ NO ____

17. In regards to a hierarchy-of-effects model, which step was the advertising for each product/service aimed at impacting?

    a. Product Awareness _____

    b. Product Knowledge _____

    c. Product Liking _____

    d. Product Preference _____

    e. Product Conviction _____

    f. Actual Purchase _____

    g. Attitude Change _____

    h. Other _____

18. What type of control will be required for continued use of a videotex system to advertise on? (instant updating, etc.)

19. What improvements or requirements are necessary to upgrade videotex to where your company will be satisfied with it as a viable media alternative?

20. What quantifiable results were used to evaluate the success of the videotex venture? (please elaborate if possible)

21. What type of pricing scheme would be favored by your company for use in buying space on a videotex system?

   a. A cost-per-thousand accesses charge ____

   b. A per-frame(s) used charge ____

   c. A combination of (a) and (b) ____

   d. A flat fee to be on the system ____

   e. A flat fee, plus cost-per-thousand charge ____

   f. Other _____

22. What price range does your company consider efficient and economical for a videotex system to charge (and one you would expect to pay)?
   *Answer with the answer from Q21 in mind--answers c and e would require checking a CPM and Per-Frame or Flat Fee response.

   CPM Charge: under $10 ____   Per-Frame Charge: under $150 ____
              $10-20 ____   (yearly) $150-450 ____
              $21-50 ____ $451-750 ____
              $51-75 ____ $751-1000 ____
              $76-125 ____ $1001-1250 ____
             over $125 ____   over $1250 ____

   Flat Fee: _____ to _____ per year

23. What percentage of your advertising budget was (would be) allocated to videotex?

	WAS	WILL BE IN 1985 (estimate)	WILL BE IN 1990 (estimate)
a. Less than 0.50%	____	____	____
b. 0.50 to 0.99%	____	____	____
c. 1.0 to 4.99%	____	____	____
d. 5.0 to 9.99%	____	____	____
e. 10.0 to 20.0%	____	____	____
f. Greater than 20%	____	____	____
g. Videotex will not be a viable alternative	——	____	____
h. Do not know	____	____	____

24. How satisfied are you with your advertising agency's knowledge of videotex? Our agency is _____.

   Very Satisfied 10--9--8--7--6--5--4--3--2--1--0 Very Dissatisfied

25. What penetration level (of TV homes) does your company consider sufficient to make videotex a viable alternative to the other media?

    a. Less than 0.5% _____

    b. 0.5% to 0.99% _____

    c. 1.0% to 4.99% _____

    d. 5.0% to 9.99% _____

    e. 10.0% to 20.0% _____

    f. Greater than 20.0% _____

    g. Videotex will not be a viable alternative _____

    h. Do not know _____

26. What future plans does your company have for using videotex?

    a. None _____

    b. More Experimentation _____

    c. Do not know _____

    d Greater Use (please elaborate)

27. Has your company been involved in experimentation with:

    a. Cable _____

    b. Satellite TV _____

    c. Videodisc/Videotape _____

    d. Direct Broadcast Satellite _____

    e. Low Power Television _____

28. Lastly, could you provide or list some of the responses that have been received from consumers who viewed your advertising on the videotex system. Thak you.

BIBLIOGRAPHY

BIBLIOGRAPHY

Alber, Antone F. "Videotex: Its success is on the line, its future in abeyance." Data Communications, March 1982, pp. 177-190.

Baldwin, Thomas F., and D. Stevens McVoy. Cable Communications. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1983.

Bartlett, Robert. "Format of the Future? Electronic Home Shopping." Progressive Grocer, September 1981, pp. 84-88.

Bergland, G. D. "Experiments in Telecommunications Technology. IEEE Communications, November 1982, pp. 4-14.

Berkman, Sam. "A PLP Tutorial." Presented at Videotex '82 in New York, June 28, 1982.

Bloom, L. R., A. G. Hanson, R. T. Linfield, and D. R. Wortendyke. "VIDEOTEX Systems and Services." Report 80-50 from the National Telecommunications and Information Administration, October 1980.

Brown, H. G. "Implementing Videotex Standards: A Comparison of CEPT and PLP." Presented at Videotex '82 in New York, June 28, 1982.

Brown, R. O., and C. L. King. "Voice Mail Applications for Big and Small Users." Telephony, April 19, 1982, pp. 70, 75, 76.

Clarke, K. E. "Videotex Display Technology: the Immediate Past and the Likely Future." The Radio and Electronic Engineer, February 1982, pp. 59-66.

Cornfeld, William B. "Electronic Banking: Why Its Time Has Finally Come." Presented at Videotex '82 in New York, June 29, 1982.

Danna, Sammy R. "FEP--Field's Teletext System." E-ITV, October 1981, pp. 42-46.

Ducey, Richard V. and Robert E. Yadon. "A Human Factors Research Program for Videotex Technology." IEEE

Transactions on Broadcasting, BC-28 (March 1982), 9-19.

Elton, Martin. "Educational and Other Two-Way Cable Television Services in the United States." Alternate Media Center, 1980.

Edward, Gwen C. "A National Videotex Intelligent Network and It's Role in the Information Industry." Presented at Videotex '82 in New York, June 30, 1982.

Farrel, J. H. " A Gateway to Videotex." *Telephony*, October 11, 1982, pp. 82, 85.

"Five Trends Aid New Media." *Electronic Media*, June 24, 1982, p. 14.

"Games Rank First on Videotex List." *Electronic Media*, March 31, 1983, p. 8.

Gordon, Richard L. "Teletext promise pervades NAB's annual convention." *Advertising Age*, April 18, 1983, pp. 3, 56.

Handler, Gary J. "Networking—Bit by Bit." Presented at Videotex '82 in New York, June 28, 1982.

Haslam, Gerald. "The Whole Business of Corporate Investment." Presented at Videotex '82 in New York, June 30, 1982.

Kent, Catherine. "High Interest in Home Banking." *PC WORLD*, May 1983, pp. 68-76.

Larratt, Richard. "Videotex for TV, How it Works, Part 3." *Radio-Electronics*, February 1982, pp. 59-61, 102.

Lax, Leo and Mark Olson. "NAPLPS Standard Graphics and the Microcomputer." *BYTE*, July 1983, pp. 82-92.

Nash, Deanna C., and David A. Bollier. "Protecting Privacy in the Age of Home Tech." *Technology Review*, August/September 1981 pp.67-75.

Price, David. "John Campbell: Highrolling In the Two-Way Stakes." *CableVision*, February 9, 1981.

Popovics, Jean-Luc. "Optical Fiber Multiservice Subscriber Connection System: SAFO." *IEEE Transactions on Communications*, Vol. Com-30, No. 9, September 1982, pp. 2215-2220.

Privacy Law in the States, Appendix 1, The Report of the Privacy Protection Study Commission, U.S. Government Printing Office, July 1977.

Steiner, Robert L. "Does Advertising Lower Consumer Prices." Journal of Marketing, October 1973, pp. 19-26.

Steiner, Robert L. "Toward a New Theory of Brand Advertising and Price." presented at the annual meeting of the American Academy of Advertising, March 1977.

"Still tugging and pulling on teletext." Broadcasting, February 15, 1982, pp. 34-35.

Stokes, Judith Tereno. "Why They Don't Trundle You Off When They Find You Talking to Your Television Set." Videoplay, June 1980, pp. 23, 56-59.

Sutherland, Roy A. "Home Banking: Electronic Money Invades the Living Room." The Futurist, April 1982, pp. 13-17.

Talarzyk, Wayne W., and Robert E. Widing II. "Introduction to and Issues with Videotex: Implications for Marketing." Working Paper Series, Ohio State University, January 1982.

Technology and Privacy, Appendix 5, The Report of the Privacy Protection Study Commission, U.S. Government Printing Office, July 1977.

The Privacy Act of 1974: An Assessment, Appendix 4, The Report of the Privacy Protection Study Commission, U.S. Government Printing Office, July 1977.

The Viewtron Newsletter, Vol. I, December 1981, published by the Viewdata Corporation of America, Miami.

The Viewtron Newsletter, Vol. II, June 28, 1982, published by the Viewdata Corporation of America, Miami.

Toth, Arpod G., Cho-Lun Wong and Paul A. Strudwick. "Communications to the Home with Fiber Optics." 1981 Communications Convention, pp. 24.1.1-24.1.6.

Trahan, Diane. "Oracle vision: Profitability through ads." Advertising Age, September 28, 1981, pp. 64-65.

Tydeman, John, H. Lipinski, R. Adler, M. Nyhan, and L. Zwimpfer. Teletext and Videotex in the United States. New York: McGraw-Hill Publications Co., 1982.

Utterback, J. M. "Innovations in Industry and the Diffusion of Technology." Science, 183, (February 15, 1974), 620-626.

Waites, William. "The View From the Corner Office." Unpublished, 1982.

Waites, William. "What Electronic Services Can Mean to the Marketer." Presented at Videotex '82 in New York, June 30, 1982.

Warner Amex Cable Communication, Inc. " Code of Privacy", 1981.

Westin, Alan F. "Home Information Systems: The Privacy Debate." Datamation, July 1982, pp. 100-114.

LIST OF REFERENCES

LIST OF REFERENCES

"A Marketing Tool Puzzles Its Owners." Media Decisions, May 1979, pp.72-73, 100-103.

"Agencies hook up to medium." Advertising Age, April 26, 1982, pp. M26-28.

Aldrich, M. J. "World Review of Private Videotex." Presented at Videotex '82 in New York, June 30, 1982.

Amundson, Dennis O. "Security Service Enhances Telco Financial Security." Telephony, April 12, 1982.

"Ancillary Services Seen for the Future of Cable." Broadcasting, May 26, 1980, pp. 70-71.

Arlen, Gary. "Getting Ready for Videotex, Teletext and the Interactive Worlds Beyond." CableVision, June 1, 1981, pp. 233-245.

"ASNE Study on Videotext Reveals Deep Concern." Editor & Publisher, March 7, 1981, pp. 40-41.

"AT&T and CBS to Try Videotex in New Jersey." Editor & Publisher, October 24, 1981, p. 62.

"AT&T Will Let Them Put It in Writing On Cable, Pay TV Foreclosure." Broadcasting, May 10, 1982, pp. 58-59.

Batten, James K. "A History of K-R's Viewdata Project." Editor & Publisher, July 4, 1981, pp. 18, 20.

Berman, Richard. "Cable Operators & Alarm Companies: Can They Work Together?" TVC, July 1, 1982, p. 76.

Bosman, N. J. "A System Approach on Interactive Videotex." New Systems and Services in Telecommunication. New York: North-Holland Publishing Co., 1981, pp. 115-119.

Boutmy, E. J., and A. Danthine. Teleinformatics '79, proceeding of the International Conference on Teleinformatics. New York: North-Holland Publishing Co., 1979.

Brenner, Elizabeth. "OAG Taking Flight to Videotex Plunge." Electronic Media, October 7, 1982, pp. 1, 23.

Brenner, Elizabeth. "Knight-Ridder puts video future on line." Advertising Age, May 16, 1983, pp. 1, 44, 53.

"British Teletext Invasion." Broadcasting, October 11, 1982, p. 86.

Burns, Red. "Technology is Not Enough." Alternate Media Center, 1981.

Burton, Jack. "Japan Advertisers Slow to Try New Media." Electronic Media, September 30, 1982, p. 11.

Bushman, Anthony, and Richard Robinson. "Two-Way Television: A Tool For New Product Research." Business Horizons, July/August 1981, pp. 69-75.

"Cable marketing's newest dish." Advertising Age, April 26, 1982, P. M-21.

"Cable Shop Unveils Infomercial; National Expansion Possible." CableAge, April 5, 1982, p. 33.

"Cable Shop-At-Home Continues to Develop." Marketing & Media Decisions, June 1981, pp. 34, 209, 210.

Canape, Charlene. "Savvy N.J. Town Gets First Try at C135-AT&T Videotex." Electronic Media, October 7, 1982, pp. 1, 21.

Canape, Charlene. "Scrolling Text Stays in Picture." Electronic Media, March 17, 1983, p.17.

"Captain System." Report prepared by the Ministry of Posts & Telecommunications and the Nippon Telegraph & Telephone Public Corporation.

"CATV Videogames Service Set." Electronic Media, July 15, 1982, p. 3.

Christopher, Maurine. "Most cable subscribers ok ads: Gallup." Advertising Age, March 15, 1982, p. 12.

Christopher, Maurine. "MSN rushes hard to sell availabilities." Advertising Age, February 15, 1982, p. 48.

"Comp-U-Card Proves that Electronic Shopping Works." Direct Marketing, November 1981.

"Comp-U-Store: How Retailers React to It." Retailing Home Furnishings, October 12, 1981, p. 1.

Carey, John. "Consumer Information Habits." Alternate Media Center, 1981.

Carey, John. "Implementing Interactive Telecommunications Projects: A Baker's Dozen of Issues and Problems." Alternate Media Center, 1981.

Carne, E. Bryan. "New Dimensions in Telecommunications." IEEE Communications, January 1982, pp. 17-25.

Case, Donald, Milton Chen, William Paisley, Ronald Rice, and Everett M. Rogers. "The Kentucky Green Thumb Videotext Experiment: Uses, Impacts, and Evaluations." Presented to the Human Communication Technology Interest Group of the International Communication Association Convention, Boston, May 1982.

"Catalogue Cornucopia." Time, November 8, 1982, pp. 72-79.

Caswell, Stephen A. "Microcommunications: An Evolving Bazaar." Mini-Micro Systems, September 1980, pp. 110-118.

"CBS/AT&T: Joint Videotex Field Test." Unpublished publicity information release from CBS, Inc., New York, 1982.

Chessler, David. "The 1982 Consent Decree and the Future of the Telephone Industry." Public Utilities Fortnightly, March 4, 1982, pp. 24-30.

Clark, R. T. "The Growth of Electronic Funds Transfer and Automatic Banking in the Next Ten Years." Teleinformatics 79. New York: North-Holland Publishing Co., 1979.

"Contradictions Emerging on Future of Interactive TV." CableAge, May 18, 1981, pp. 60-63.

Cohen, Tedd A. "For Whom Does Bell Toll." Forbes, January 19, 1982, p. 40.

Davis, Peter W. "World Communications Get the Videotex Picture." Broadcast Engineer, May 1982, pp. 102-108.

"Dow Jones Sees Results with Two-Way Cable News." Editor & Publisher, March 22, 1980, p. 15.

Drexler, Michael D. "People to people...one on one." Advertising Age, March 8, 1982, p. M-30.

"Dual Standards." Economist, May 30, 1981, pp. 62-63.

Dubke, Hans-Peter. "Bildschirmtext: Investment In Retailer's Future." Direct Marketing, October 1982, pp. 46-50.

Ducey, Richard V. "The Adoption and Diffusion of Innovations from a Telecommunication Perspective." Unpublished, May 1982.

Easton, Anthony. "Viewdata--A product in Search of a Market?" Telecommunications Policy, September 1980, pp. 221-225.

Edwards, Morris. "Videotex/Teletext Services Poised for Major Growth in United States." Communication News, August 1982, pp. 88-92.

"Electronic Shopping Builds A Base." Business Week, October 26, 1981, pp. 125, 129, 131.

Erlandsen, E. V. and T. Wedde. "The Telidok System." Teleinformatics 79. New York: North-Holland Publishing Co., 1979, pp. 71-77.

"Evaluation Report of the Hi-Ovis Project." The Visual Information System Development Association, 1980.

Fazio, Glady J. "Talk Shop with Comp-U-Star." Today, January 1982, p. 11.

Fedida, Sam, and Rex Malik. The Viewdata Revolution. New York: Halsted Press, 1979.

"Finding New Uses." Economist, October 24, 1981, p. 90.

"First Test of Transactional Videotex System is Announced." Communication News, January 1982, p. 15.

Flax, Steve. "Stay Tuned to Tomorrow." Forbes, July 19, 1982, pp. 66-72.

"FNE Operates as Private Videotex System." CompuServe Information Service, July/August 1982, pp. 14-18.

"Foster Reports: New Video Technology and its Impact on Commercial Communications." Report published by Foster Advertising Limited, September 1981.

Frank, Ronald A. "Market Potential of Viewdata Undergoing Tests." Software News, March 1, 1982, pp. 11, 14.

"Futuristic Shopping." CableVision, May 10, 1982, pp. 358-369.

Gage, T. J. "Video shops around for a future." Advertising

Age, November 2, 1981, pp. 5-8.

Gage, T. J. "Two-way TV screening out the bugs." _Advertising Age_, January 18, 1982, pp. 52, 56.

Gage, T. J. "Cableshop prepares to show off its line." _Advertising Age_, January 18, 1982, pp. 5-8.

Gates, Geoffrey W. "An Operational Interactive Cable Television and Home Information System." Presented at COMPCON '82.

Gay, Verne. "One Giant Step for Videotex." _Marketing & Media Decisions_, December 1981, pp. 58, 59, 150, 152.

Gelman, Morris. "Cable Feels Pressure from New Technology." _Electronic Media_, August 19, 1982, pp. 1, 21.

Gelman, Morris. "Producer Readies New Quickscan System." _Electronic Media_, October 14, 1982, p. 4.

Genova, B. K. L. "Prestel is Working in Britain." _Cablelibraries_, 9 (February 1981), 30.

"Get Ready For the 'Smart Card'." _Dun's Business Month_, May 1982, pp. 88-90.

Greenhouse, Lee. "Videotex: The Financial Services Implications." Presented at Videotex '82 in New York, June 29, 1982.

"Group W Cable Introduces Quest Two-Way Service." _CableAge_, September 20, 1982, p. 36.

Gupta, Udayan. "Videotex May Spell Survival for Banks." _Electronic Media_, October 21, 1982, pp. 20-21.

Gupta, Udayan. "New Media Opportunities Boost Potential for Direct Marketers." _Electronic Media_, March 31, 1983, p. 17.

Hayter, George. "A System Operators View of the Services and its Finances." Presented at Videotex '82 in New York, June 30, 1982.

Helming, Ann. "Advertisers face consumer caution." _Advertising Age_, January 18, 1982, pp. S-10, S-12.

Henderson, Madeline, and Marcia MacNaughton. "Electronic Communication: Technology and Impacts." _AAAS Selected Symposia Series_. Boulder: Westview Press, 1980, pp. 23-35.

Hill, Authur. "Cable and Videotex: A Leap of Fate?" TVC, July 1, 1982, pp. 54-64.

Hoke, Pete. "Amex Taking Giant Creative Strides on Prestel." Direct Marketing, November 1980, pp. 58-64.

Hoke, Pete. "CBS/AT&T Video Test: New Distribution Channel." Direct Marketing, February 1983, pp. 42-49, 98.

Hoke, Pete. "German Videotex Tests Gain Consumer Acceptance." Direct Marketing, February 1982, pp. 44-48.

Hoke, Pete. "Viewmart Builds Electronic In-Home Shopper Data Base." Direct Marketing, June 1982, pp. 78-91.

"Home products seen as big gainers in poll." Advertising Age, July 19, 1982, p. 18.

Hudson, Graham. "Prestel: The Basis of an Evolving Videotex System." BYTE, July 1983, pp. 60-78.

"In Brief." Broadcasting, July 12, 1982, p. 97.

Jervey, Gay. "Y & R study: New life to singles." Advertising Age, October 4, 1982, p. 14.

Kaatz, Ron. Cable: An Advertiser's Guide to the New Electronic Media. Chicago: Crain Books, 1982.

Karpoff, Sid. "Computer Shopping: Bargains by the Key Strokes." The Hartford Courant, January 12, 1982, pp. D1, D2.

King, Robin W. "Teletext and Viewdata for Blind People." The Radio and Electronic Engineer, April 1982, pp. 171-176.

Kriesman, Richard. "Teens' role grows in family's grocery purchases." Advertising Age, May 17, 1982, p. 68.

Lazarus, George. "Survey: Consumers often choose store over prices." Dayton Daily News, May 29, 1982.

Leblang, Paul. "New Electronic Media: Retail Opportunity." Direct Marketing, August 1981, pp. 56-60.

Le Clercq, Philippe. "French Videotex: Telecom Tomorrow." Teleinformatics 79. New York: North-Holland Publishing Co., 1979, pp. 129-133.

Levine, Richard. "Broadening the Business Focus: Dow Jones Move into Consumer Data Bases." Presented at Videotex '82 in New York, June 28, 1982.

Lockhart, M. Christopher. "Containing Personal Information: The Privacy Act." Unpublished, June 1982.

Lockhart, M. Christopher. "Home Shopping...and He Said, "Let There Be Convenience"." Unpublished, June 1982.

Lockhart, M. Christopher. "The Advertising-Demand-Price Triangle." Unpublished, May 1982.

Lockhart, M. Christopher. "Videotex and the Science Channel." Unpublished, June 1982.

Loker, Elizabeth. "Where Videotext Fits in the Communications Organization." Presented at Videotex '82 in New York, June 29, 1982.

Madden, John C. "Prospects for Videotex and Teletext." Telecommunications and Productivity. pp. 255-261.

Maher, Thomas M. "Comp-U-Claim: An Electronic Buying Service." The National Underwriter, January 2, 1981, p. 1.

"Making Prestel Pay." The Economist, March 6, 1982, p. 33.

Malloy, Rich. "Commentary: Personal Computers and Videotex." BYTE, July 1983, pp. 114-129.

"Mapping Out a New Frontier." Broadcasting, March 16, 1981, pp. 224-226.

Marks, Jill. "The Long Road to Two-Way." TVC, July 1, 1982, pp. 44, 45, 49-51.

"Members Find Comp-U-Card Means Convenient Shopping." Direct Marketing, April 1981.

Metz, Brad. "Interactive System Facing Marketing Dilemma." CableAge, October 19, 1981, pp. 17-20.

Metz, Brad. "Home Shopping Programming Reaching Competitive Peak." CableAge, March 22, 1982, pp. 6-10.

Metzgen, Humphry. "Making Money From Teletext." Presented at Videotex '82 in New York, June 28, 1982.

Miller, Darby. "Videotex: Science Fiction or Reality?" BYTE, July 1983, pp. 42-56.

Mitchell, Shirley. "Appealing to Shoppers Through A CRT Terminal--Seeing Isn't Necessarily Buying." Data Management, April 1981, pp. 32, 33, 37.

Mokhoff, Nicolas. "A Computer Center for the Homeowner." IEEE Spectrum, September 1980, pp. 73-77.

Moozakis, Chuck. "Local Advertisers: Why We Use Cable." TVC, July 15, 1982, pp. 44-47.

Morse, R. C. "Videotex Explosion: Developing the Technology Creating a Market." Cable Marketing, May 1982, pp. 78-85, 96, 101, 132.

Morse, R. C. "Videotex Update." Cable Marketing, October 1982, pp. 28-31, 75.

"MNS Finds Good Consumer Awareness." TVC, December 15, 1981.

Murray, George B. "Videotex Revolution will Change Face of Advertising Structure." Direct Marketing, October 1982, pp. 30-44.

Neustadt, Richard M. "Privacy and Videotex Systems." BYTE, July 1983, pp. 96-100.

"New Interaction Capability Offered through EIDAK System." CableAge, August 9, 1982.

"Newslink Videotex Service Forsees Ads." Electronic Media, July 22, 1982, p. 11.

"New Video Print Report Predicts Cable TV will be Outflanked by Networks on Home Information Services." Communication News, October 1980, p. 15.

Nisenholtz, Martin. "Graphics Artistry On Line." BYTE, July 1983, pp. 104-110.

"Now, It's the 'Stay-at-Home Society'." U.S. News & World Report, June 28, 1982, pp. 64-66.

"O & M Exec Predicts Ad Flight to Electronic Media." Electronic Media, June 17, 1982, p. 23.

"O & M Exec Takes on the Questions About New Media." Electronic Media, June 24, 1982, p. 12.

Oliver, D. R. and R. Sugden. "Viewdata and the ICL Bulletin System." ICL Technical Journal, November 1981, pp. 365-378.

"Optical Visual Information System Hi-Ovis." The Visual Information System Development Association, 1980.

"Pay TV, Videotex Cable's Salvation during '80s: IRD." CableAge, August 23, 1982, p. 36.

Pitsch, Peter K. "Home Video Competition: What Should Regulations Do?" TVC, October 1, 1982, pp. 78-85.

Pollack, Andrew. "Introducing 'Tele-Shopping'." New York Times, December 24, 1981, pp. D1, D4.

Porter, Sylvia. "Let's demand checks back." Lansing State Journal, May 31, 1982, p. 4B.

"Programming & Service Strategies for Two-Way TV & Viewdata Systems." International Resource Development, August 1981.

"Putting Social Trends to Use in Cable." Broadcasting, May 10, 1982, p. 47.

"Q & A on the issue of Telecommunication." Editor & Publisher, May 23, 1981, pp. 7, 22, 31.

Radolf, Andrew. "Knight-Ridder to Test Home Electronic Information System." Editor & Publisher, April 12, 1980, pp. 7, 8, 21.

Reiss, Craig. "The Dark Side of Cable." Marketing & Media Decisions, August 1981, pp. 62, 63, 118, 120.

"Ripley's Believe It or Not!" Lansing State Journal, July 7, 1982, p. 3B.

Royal, James C. "Electronic Newspaper Hits Home." Sales & Marketing Management, November 17, 1980, pp. 41-42, 50.

Roswell, Clint. "Go Shopping From Your Easy Chair." Daily News, August 2, 1981, p. 1.

Sawyer, Robert A. "The shape of things to come." Advertising Age, January 18, 1982, pp. S-2, S-48, S-49.

Scheley, Stewart. "Government, Operators Face Issue of Cable Subs Privacy." Multichannel News, April 19, 1982, pp.33-35.

Schewe, Regina R. "Why Add Enhanced Services." TVC, July 1, 1982, pp. 66-69.

Schittel, Hans-Peter. "A Field Experiment in Text Communication for Clarification of the Acceptability Question." New Systems and Services in Telecommunications. New York: North-Holland Publishing Co., 1981.

Schorin, Gerald A., and Bruce G. VandenBergh. "New world come to creation." Advertising Age, November 16, 1981, pp. 5-13.

Schwartz, Martin D. "Interactive System Seen Altering Ratings." Electronic Media, September 2, 1982, pp. 3, 23.

Sherman, P. "Supermarket at your Sofa." Fortune, April 21, 1980, p. 121.

"Shopping Via Cable." Broadcasting, October 11, 1982, p. 82.

Sigel, Efrem. Videotex: The Coming Revolution in Home/Office Information Retrieval. New York: Crown Publishing/Harmony Books, 1980.

Spindle, Les. "A World of Information." Radio Electronics, February 1982, pp. 88, 89, 102.

Stine, G. Harry. "Join the Computer Community." Science Digest, September 1981, pp. 40-42.

Stone, Bob. Successful Direct Marketing Methods. Chicago: Crain Books, 1979.

"Storer Installs Fiber Optic System in Penbroke Pines." CableAge, August 23, 1982, p. 40.

"Storm clouds gather over cable front." Advertising Age, May 10, 1982, p. 62.

"Strategic See Billion Dollar Videotex Market." Communication News, September 1981, p. 19.

Sugg, John. "Study Pegs Commercial TV as Biggest Loser to Videotex." Electronic Media, July 15, 1982, p. 23.

Sullivan, Bill. "Cabletext: Into Its Second Year Via Satellite." Satellite Communications, May 1982, p. 26-28.

Taylor, C. Thomas. "The GTE Medical Information Network." Presented at Videotex '82 in New York, June 28, 1982.

"Teleshopping: The Future Is Now (Non-Store Retailing: Its Time?)." Stores, September 1980, pp. 71-72.

"Teleshopping: The New Electronic Marketplace." The Yankee Group, June/July 1981.

"Teletext and Videotext: Jockeying for Position in the Information Age." Broadcasting, June 28, 1982, pp. 37-49.

"Teletext and Viewdata: America Plays Catch Up." Economist, August 9, 1980, pp. 70-71.

Thayer Jr., G. B. "How to Choose the Competitive Battlefield." Industrial Marketing, June 1982, pp. 60-68.

"The Computer as a Retailer." The New York Times, January 9, 1981, pp. D1, D4.

"The Television Explosion." A NOVA broadcast, June 12, 1982 on PBS.

"The Why's and Wherefore's of Text Transmission." Broadcasting, July 5, 1982, pp. 32-35.

"The Wired Home: Boom or Base?" Sales & Marketing Management, October 12, 1981, p. 22.

Thomas, Marita. "Comp-U-Store: A New Era for GM." Non-Foods Merchandising, March 1982, pp. 1, 66-68.

Thomas, Rose. "Banking on electronic piggy banks." Advertising Age, January 18, 1982, pp. S-42-S-44.

Tjaden, Garold. "The INDAX Two-Way CATV Network for Videotex Services." Presented at Videotex '82 in New York, June 28, 1982.

Trachtenberg, J. A. "Taking Inventory of Video Shopping." View, August 1981, pp. 49-51.

"Transactional Services will Support Videotext, Experts Say." Video User, May 1982, p. 7.

Truxal, Carol. "Americanizing Videotex." IEEE Spectrum, November 1982, pp. 52-56.

"Two-Way Cable Television: An Evaluation of Community uses in Reading, Pennsylvania." Alternative Media Center, April 1978, Vol. 1 & Summary.

Tydeman, John. "Videotex: Ushering in the Electronic Household." The Futurist, February 1982, pp. 54-61.

Tyler, Michael and Hilary B. Thomas. "Cost Model Plus Field Trials Reduce Profit Uncertainties of Videotex." Telephony, October 11, 1982, pp. 66-74.

"U.S. in Need of Videotex Primer." Electronic Media, June 10, 1982, pp. 1, 22, 23.

"Video Mail Order Network Set for Early '83 Launch." CableAge, May 3, 1982, p. 90.

"Video Shopping May Face Resistance, Says Report." CableAge, December 14, 1981, p. 36.

"Viewdata Popular with Businesses in UK." Computer Decisions, May 1981, p. 28.

"Viewtron Looks Good as a News Medium." Editor & Publisher, November 7, 1981.

Waring, Paul C. "Cost Profiles & Consumer Acceptance." Presented at Videotex '82 in New York, June 30, 1982.

White, James A. "IBM Says Orders, Shipments are Strong, Plans Private Videotex Systems for Firms." Wall Street Journal, June 18, 1982.

"What Price Immediacy?" E-ITV, October 1981, p. 36.

Wicklein, John. "Guaranteeing Diversity in the New Communications." Presented at Videotex '82 in New York, June 29, 1982.

"Window on the World: The Home Information Revolution." Business Week, June 29, 1981, pp. 74-82.

Winsbury, Rex. "Viewdata in Banking: Revolutionizing the Customer Interface." The Banker, April 1981, pp. 133-139.

"Zenith Striking Gold with Pay TV, Cable Hardware." Electronic Media, August 12, 1982, p. 18.