For information address:

SAGE Publications, Inc.
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Beverly Hills, California 90212

SAGE Publications India Pvt. Ltd.
C-236 Defence Colony
New Delhi 110 024, India

SAGE Publications Ltd
28 Banner Street
London EC1Y 8QE, England

Printed in the United States of America

Library of Congress Cataloging in Publication Data

Main entry under title:

The new media.

1. Mass media—Research. 2. Mass media—Technological innovations. I. Rice, Ronald E.
P91.3.N49 1984 001.51 84-3287
ISBN 0-8039-2271-X
ISBN 0-8039-2272-8 (pbk.)

FIRST PRINTING

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5 Rival Theories of Electronic Newsreading

This chapter explores theories of newsreading in the context of electronic newspapers with respect to system design, adoption, and use. The basic argument put forth is that emerging videotext/teletext news services are presently rooted in a limited theory of newsreading, to the degree that they are based in theory at all. Videotext and teletext technology was briefly described in Chapter 2. Table 2.2 provides a summary listing of known videotext systems—both pilot and commercial, though it does not include the many financial transaction systems. See Tydeman, Lipinski, Adler, Nyhan, and Zwimpfer (1982: Chap. 13) for a review of those services.

Before examining newsreading theory in this context, the "electronic newspaper" requires some description. The electronic newspaper is here defined as any system for distributing textual information on TV screens,

where shelf life and manipulability of information permit direct competition with pulp newspapers. To compete directly with pulp newspapers, the shelf life of much of the information must be relatively brief (generally less than 24 hours). While information of a more enduring usefulness might be offered by videotext and teletext systems, such information typically competes with media other than newspapers. Manipulation of information should permit the newsreader *actively* to select subsets of information from the larger textual package in "real time."[1] Thus, continuous scrolling of textual information on a TV screen, which Lowenstein et al. (1982) has categorized as "rotatext," is viewed as fundamentally different from newsreading, where the reader can "scan" and "skip about" at will among the content choices of the newspaper. This interactive character of the electronic newspaper can be achieved through videotext or teletext systems. The ability to display a subset of the available information at will on the screen, through a reader's active choice, is the primary attribute of electronic newspapers.

CONTRASTING PULP NEWSPAPERS AND ELECTRONIC NEWSPAPERS

The emerging electronic newspaper has been the focus of excited scholarly discussion in recent years (see also Neustadt [1982] for a discussion of economic and legal issues). Parker's early scenario of the electronic newspaper provides a useful preview of now-emerging information utilities:

> A fantasy trip into the future may give a feeling for such a communication medium. Sitting at the breakfast table, you might cause the latest headlines to appear on a small display screen simply by touching a key. These headlines may have been written five minutes before. Pointing at a headline might get the story displayed. . . . Suppose you encounter a name of a person you would like to know more about: ask for a bibliographic sketch. Suppose you do not completely understand the economic reasoning behind an action of the International Monetary Fund: there might be available a short tutorial on some aspect of international economics. . . . Suppose you want to search the want ads or supermarket ads. Instead of shuffling pages, you may just ask to have ads displayed in a particular category. . . . Suppose a high school student wishes to search the equivalent of the local public library for information needed to write a term paper. He can quickly search the equivalent of the card catalog and soon be browsing in relevant material [Parker, 1973c].

The emergence of the electronic newspaper draws momentum from inherent problems of pulp newspapers. These problems are perhaps best summarized by Smith (1980: 73–155). The modern American newspaper has a highly computerized news gathering and news editing "front shop."

Vast quantities of textual information of short shelf life are gathered and edited on video display terminals. Most of such textual information (about 90%) is not used (Shaw, 1977). The key bottleneck for pulp newspapers—in production time and costs—is the printing press and systems for distributing to homes of newsreaders. This has become a greater problem with increased migration of subscribers to the suburbs, and the decline in urban newsstands (Carey, 1981a). Some major newspapers have developed complex systems of zoning, microzoning, tailoring, and sectioning in order to distribute subsets of the collected and edited information to ever smaller, homogeneous audience segments. These efforts by cumbersome pulp newspapers herald what Toffler argues is the "de-massification" of the mass media (1981: 155–165). Smith views this effort as an attempt to provide the newsreader with a paper made up of information most directly relevant and useful to the reader. Such individualization of the newspaper provides advertisers with narrowly defined audience segments while reducing distribution of newsprint that isn't read. This process may be called microsegmentation.

The electronic newspaper completely alters the production and distribution constraints of the pulp newspaper. Given the capacity to *address* specific textual information packets to specific newsreading households, the electronic newspaper is, in principle, completely individualized. Once textual information is stored in a machine-readable form, one challenge for videotex systems is to provide access to that information to individual newsreaders in a reasonable time frame. Indeed, one could view the electronic newspaper as providing general reader access to a currently updated newspaper morgue. Such a view mirrors Smith's "electronic Alexandria," where the accumulated information wealth of the newspaper and its wire services are made available to the inquiring reader (Smith, 1980: 300-318). The electronic newspaper, when fully implemented, becomes an electronic library with a constantly expanding wealth of instantly updated information.

However, reading the newspaper is not like using the library. If newspapers were read with the frequency with which people visit libraries, newspapers could not survive economically. Further, to view the electronic newspaper as simply an information storage and retrieval system ignores important characteristics of newsreading.

Carey (1981a) discusses historical consumer behavior with respect to newsreading and telephone usage, both relevant to videotex usage. Price and literacy barriers operated to require a century for newspapers to achieve 50% penetration in the U.S. The act of purchasing is typically a one-time decision to subscribe; home or office delivery requires no action on the part of the newsreader. Furthermore, Carey cites research (mostly by Bogart) showing that the newspaper reading habit develops during adolescence, if at all; after that, the "overwhelming majority of newspaper readers are regular or habitual readers." Reading accompanies daily rituals and is typically performed in the same place at the same time; indeed late deliveries lead to cancellations (Stone and Wetherington, 1979). Readers have individual styles (such as from back to front, or quick

scans followed by later follow-up of stories of interest). Berelson (1949) also studied the social uses of newsreading, taking advantage of a citywide newspaper strike. The 60 intensive interviews revealed conscious uses (information on and interpretation of public affairs, a tool for daily living, respite, social prestige, and social contact) and nonconscious uses (pleasure, assurance, ritualistic habit, amelioration of one's situation, information as power, and even compulsive duty). Only a third could name something they might want to know more about.

The telephone also was too expensive for residential use at first, so local drug stores became a "public telecommunications center," where residents came to use the phone and handle messages. Indeed, two of the early uses for the telephone were as a one-way mass entertainment medium and as an information service. The heavy social aspects of phone use are reflected in the ritual installation of a phone as part of starting a residence. Users pay for potential access and, indeed, are very unsatisfied with usage-sensitive billing methods. Calls are generally short, and to a small number of the same people.

Some aspects of TV viewing may also apply to electronic newsreading. Using computer-monitored data (as described in Chapter 4), Heeter, D'Alessio, Greenberg, and McVoy (1983) analyzed continuous viewing behavior of 197 randomly selected cable subscribers during a June week in 1982. They found (a) channel changing occurs regularly throughout the hour cycle (with understandable peaks at the hour and half-hour; 4.4 channel switches per hour, on the average); (b) there are extended periods (10-15 minutes) of channel sampling not aligned with show or commercial times; and (c) a moderately small set of channels (10 of 36) captured most of this switching. The first two results strongly indicate *browsing* behaviors, while "the uniform consistency across days [of channel profiles] suggests the presence of extremely *habitual* behavior, almost uninfluenced by the day of the week or the program schedule" (p. 18; emphasis added).

Other differences distinguish the pulp newspaper from the electronic newspaper. Pulp newspapers are portable; for now, electronic newspapers are locked inside TV sets connected to cable or phone lines.[2] Perhaps more significant, the pulp newspaper facilitates the "scanning" of news, as the newsreader skips from one part of the newspaper to another, reading a headline here or a lead paragraph there. All this selectivity is under the easy control of the reader. The electronic newspaper, on the other hand, displays information in screen "pages" consisting of about 50–70 words. Once a screen is read, the reader signals the videotex system that another page is desired. Strategies for what happens next need to be rooted in a theoretical understanding of the newsreading process. The next section discusses the theoretical implications of reading the electronic newspaper, followed by a review of current videotex system designs and patterns of adoption and use.

RIVAL THEORIES OF NEWSREADING

Application of two rival theories of newsreading to electronic newsreading suggests alternative design strategies. The alternative designs might then serve as potential experimental interventions in empirical tests of the rival theories.

Uses and Gratifications Research

The uses and gratifications theoretical perspective emerged as a powerful influence in mass communication research in the early 1970s, but its roots date to the 1940s. The uses and gratifications perspective can be argued to have begun with Schramm's (1949) immediate-reward and delayed-reward model of media gratifications. Another seminal work is Katz and Foulkes's (1962) article on media use as escape. Components of the uses and gratifications perspective were spelled out by Katz, Blumler, and Gurevitch (1974). The pivotal assumption of the perspective is the belief that the "audience is conceived of as active, that is, an important part of mass media use is assumed to be goal directed." The authors proceed to make clear the theoretical distinction by contrasting the uses and gratifications perspective with Bogart's (1964) conclusions about media behavior among blue-collar workers that such "experiences represent pastime rather than purposeful activity."

The uses and gratifications perspective, then, starts with the very large assumption that media use, including newsreading, serves some ulterior purpose(s) external to the communication behavior itself. Some of these purposes include pleasure, entertainment, and fantasy, so uses and gratifications theory does imply something of the rival theory of newsreading below. However, some directed or goal-motivated purpose is still assumed. As such, the research perspective suggests that people who read newspapers should be presented with lists of ulterior purposes that newsreading might serve, asking them to indicate which such purposes (gratifications sought) are served by their use of newspapers. Applying this approach to telephone usage was discussed in Chapter 3. A number of factor analytic and other types of studies have been conducted of the various posited purposes served by media use of different media and different content within media (Becker, 1979; Griffin, 1981; Levy, 1979; Rayburn and Palmgreen, 1981; Rubin, 1981a,b). Many uses and gratifications studies tend to be descriptive in nature.

Uses and gratifications research has been sharply criticized on theoretical grounds, such that one discussant at a national scholarly convention urged that nails be driven in the coffin of uses and gratifications research (Wade, 1981). Towers (1982) provides a useful overview of difficulties in uses and gratifications research. These difficulties involve the selection of statements of posited media uses, problems of focal media of study, problems of gratifications *sought* versus gratifications *obtained,* and problems with statistical analysis, and the likely confounding of "audience

needs" with "images" of different media on which audiences agree (Lichtenstein and Rosenfeld, 1983).

Other problems have to do with the *normative characteristics* of the data-collection context. Suppose for the moment that newsreading, by and large, serves no ulterior purpose external to the newsreading experience itself *for the individual reader.* This is not to say that newsreading serves no large purposes for society or culture, nor does this imply that newsreading has no effects. This is simply to say that such larger social purposes and effects have little to do with why an individual, for the most part, reads a newspaper. Suppose you then ask such an individual to explain what useful purposes his or her newsreading serves. The social situation demands that the respondent come up with a rational explanation for his or her behavior. This is especially striking in Peled and Katz's (1974) study of uses and gratifications of media behavior in Israel during the 1973 war with Egypt and Syria:

> During the height of the fighting, 40% of the population called for television programs that would contribute to their feeling of pride in state and army, solidarity with the leadership, and so on.

That respondents should agree with such normative statements in times of stress is not surprising. Whether such responses illuminate much about media usage at the individual level of analysis is open to question.

Returning to the electronic newspaper, uses and gratifications research suggests that the adoption of work-related, purposive storage and retrieval systems to videotex newspapers is theoretically appropriate. Presuming that the system user is actively seeking specific content to gratify an ulterior purpose, then a menu-driven, general-to-specific retrieval system should be put to use by former pulp newspaper readers. Residual problems remain, which are related to hardware designs, initial resistance to the technology, and knowledge of its proper use. Ulterior purposes, however, provide the driving force behind goal-directed, information-seeking behavior using videotex systems.

Play Theory Reconsidered

When Katz et al. contrasted the uses and gratifications perspective of ulterior purpose with Bogart's view of media use as a "pastime," they also set the perspective in sharp contrast with another theory of newsreading. That theory—the *play* or *ludenic* newsreading theory—was developed by Stephenson in the early 1960s and fully detailed in *The Play Theory of Mass Communication* (1967). The failure to apply ludenic newsreading theory to the electronic newspaper—or pulp newspapers, for that matter—has puzzled other scholars. Logan (1982) has theorized that "play as a theory requires too much of a gestalt shift to be 'pleasing' to many scholars and practitioners with other inclinations." Tannenbaum (1980) offers a strong exception to this trend.

While play as a formal theory has been underutilized, the notion of "play" in information systems has received some attention. Marvin (1983) urges that play be considered in telecommunications policy making. She argues that heavy emphasis on utilitarian frameworks such as productivity constrain the social flexibilities inherent in networks. Information as a commodity is pitted against imaginative fantasy in the content and uses of telecommunications. She provides examples such as the officially illicit social messaging on the ARPANET, the emergence of CB radio against strenuous regulatory obstacles to social broadcasting (Marvin and Schultze, 1977), and the transformation of the personal telephone into an "expensive smorgasbord of specialized services for commercial users." Marvin calls upon policymakers and system designers to use the potential of computers to provide "intellectual parks in our computer systems."

The ludenic newsreading theory asserts that the process of newsreading is intrinsically pleasureable, and that intrinsic pleasure is at the root of both a mature, orderly, and highly ritualized form of newsreading as well as a more casual, spontaneous, and unstructured form of newsreading. This theory suggests that people who regard newspapers as information storage and retrieval devices used to accomplish certain tasks are nonpleasure readers who generally tend to be nonreaders as well (Stephenson, 1967: 157). Thus, we do *not* argue that all uses of the *Racing Form* or the *Wall Street Journal* are intrinsically pleasurable for their readers; though we *hypothesize* that strictly task-oriented users may not be *generalized* heavy readers. We do not include electronic journals in our discussion of ludenic reading (see Turoff and Hiltz, 1982a), though something akin to play may be served by such systems.

> The increase in the speed of response, the ability of current responders to view responses to that moment, the private message exchanges resulting from responses, follow-up conference discussion, and most importantly, the ability to view how many relative inquiries and responses any member has made, all make the behavior of individuals and groups in this environment very different than what can be generated in any sort of print medium [Turoff and Hiltz, 1982b].

Play consists of those activities that people perform for their own sake, for pleasure, for recreation, for hobbies, and for self-cultivation. Stephenson argues that work "deals with reality, with earning a living, with production. Play, on the contrary, is largely unproductive except for the self-satisfaction it provides." Play is an "interlude in the day; it is voluntary and not a task or moral duty." Play is "disinterested" and while "attended to with seriousness, it is not really important" (pp. 45–46).

Regarding newsreading, Stephenson argues that the activity "has all the earmarks of play." People volunteer to read newspapers, they become absorbed in the newsreading interlude, "satisfying in itself and ending there" (p. 150). Some people are characterized as *mature* newsreaders, who treat their newsreading interlude as a formal game, following highly individualized paths through different sections of the newspaper. The

newsreading interlude is highly ritualized. *Pleasure* newsreaders, on the other hand, engage in free-form play during the newsreading interlude. These readers skip about with no particular ritual, reading fragments of the news here and there. These newsreaders see reading as entertainment, as a way to pass the time.

With pulp newspapers, *nonpleasure* newsreaders also exist, and constitute a large segment of print users. Theoretically, these are nonreaders who do not find newsreading absorbing or enjoyable. They use the newspaper to accomplish tasks, for sales information, for facts that serve purposes outside the newsreading interlude itself. Such pulp newspaper users seem to serve as the videotex designer's model of the electronic newsreader.

Key concepts in the ludenic newsreading theory are *convergent selectivity* and *apperception*. Convergent selectivity involves the individual's selection of something for himself or herself in ways that make the product uniquely individual. Newsreading is a process of convergent selectivity, whereby highly individualized rituals within the newsreading interlude "customize" the experience. Apperception is the characteristic of individuals to perceive only those aspects of a more complex situation that tie in with prior interests. Both concepts are important to the theoretical design of the electronic newspaper.

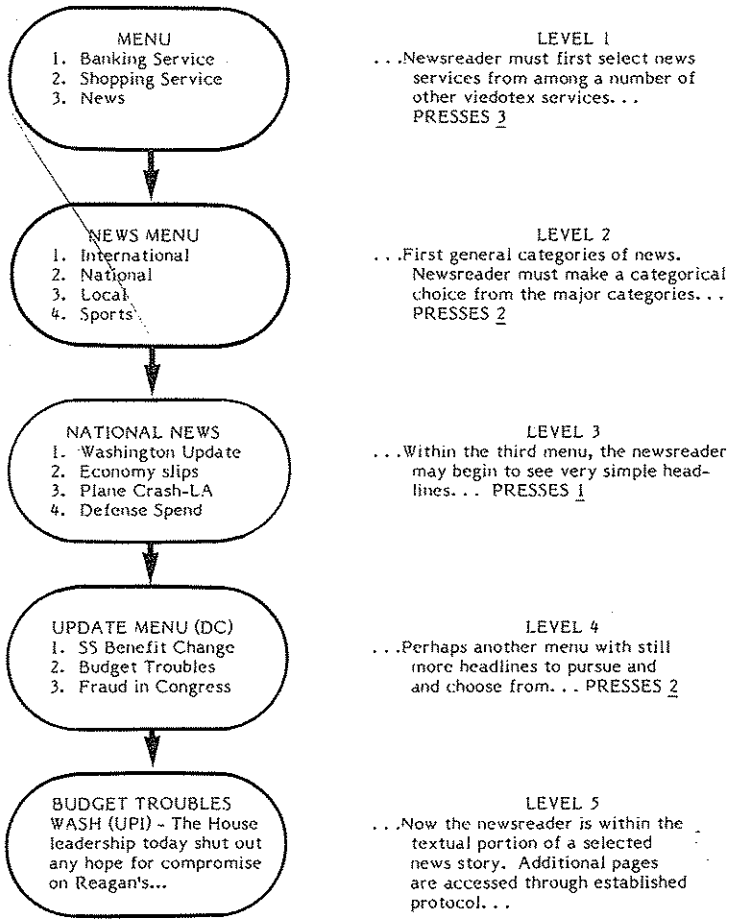
REVELANT VIDEOTEX RESEARCH: DESIGN, ADOPTION, USE, AND OBSTACLES

Numerous studies (mostly proprietary) are under way to evaluate the potential of videotex services and electronic newspapers. Tydeman et al. (1982: Chap. 9) suggest prototype videotext and teletext systems design based upon a comprehensive features analysis. We discuss features relevant to this chapter.

Most emerging systems tend to follow similar design strategies. Such systems are generally menu-driven information storage and retrieval systems. The newsreader is initially confronted with a "master menu" or index—a screen/page (or several) that lists topics of information services in the most general terms. The newsreader presses a key corresponding to the item number on the index. The index disappears from the screen, replaced by a second menu listing specific topics that fall under the more general category selected on the master menu. The newsreader selects a topic from this second menu, and so forth. The number of topic menus searched depends on the volume of information stored, its data-base structure, and the general system design. Figure 5.1 shows this process for an imaginary news search. It would take considerable time to read through all the various menus of current offerings, such as the CompuServe videotex service.[3] The sheer mass of this index implies special problems for newsreading or for information retrieval in general.

This "tree structure" or sequential menu approach is generally easy to learn and use, and costs less in terms of system overhead. But this

FIGURE 5.1 An Imaginary News Search on a Videotex System



approach places greater emphasis on the first of the objectives that Carey (1981a) and Schabas and Tompa (1983) identified as served by information retrieval designs. These objectives include

(1) to provide access to particular items(s)—(known by one or more of its characteristics)—to provide a specific answer;

(2) to group items by common characteristic(s) for browsing: the characteristics of use may be unknown by the indexer and by the user, or may not even be feasibly joined;

(3) in the extreme, to facilitate consumption of information services as a (pleasurable) habit, rather than to satisfy motivations and needs.

Typically, "browsing is viewed as an integral part of all information and is not clearly distinguished from directed search" (Grusec, 1982: 2). Even when the first two reasons are salient (i.e., information seeking), tree structures make it difficult to scan or browse to find a hidden fact; the user may not know the best source or approach. Videotex search trials show considerable failure in supporting information seeking: its success rate is only about 50%-60% rather than the minimal 80% that Sutherland (1980) deems necessary for the mass audience. Several Dutch experiments reported by Sutherland showed that from 6 to 14 steps were required to find information, and there were one or more errors in the majority of search tasks. Even with only four index steps, the majority of subjects had to "back up" at least once in the search.

There are several reasons for this problem:

(1) information usually fits into several hierarchies, and thus is susceptible to arbitrary decisions by information providers and users;

(2) classification may be poor;

(3) typical screen size provides severe limits to classification limits and increases chances of going wrong;

(4) users lose track of their spatial information location;

(5) residential use of information is typically diverse, uncritical, nonrecurrent and based upon alternate sources, unlike business information needs;

(6) residential users are generally familiar only with the two-step indexing barriers of newspapers and telephones: the page index or the directory (Carey, 1981a; Rothman, 1980; Schabas and Tompa, 1983).

A direct test of effectiveness, efficiency, and satisfaction of menu-driven versus keyword-relational retrieval designs is reported by Geller and Lesk (1981). Users of library information retrieval systems are typically more experienced and more purposeful than residential videotext users; so the authors decided to test the two designs of an actual library data base on real users (N = 779) with real tasks (1952 searches over 59 days, as monitored by the computer.) Users spent more time in keyword searches in an average session (218.1 seconds versus 181.7; $p < .001$); this extra time is (a) user time, not computer time and (b) is because users get farther and are reinforced. Over time, the keyword approach was more popular, particularly among users with experience in both systems: 79% of the searches were by keyword.

Such searches were more successful, too: If the item was known, 65% of keyword users found it compared to 30% of menu users; if users were browsing, 69% found a book on the subject of interest, compared to 36%

of the menu users; and only 24% of keyword searches resulted in *no* document versus 55% of menu searches.

A parallel controlled experiment by Schabas and Tompa (1983: Supplement) used two groups of eight students to compare hierarchical "tree" searching to multiple-hierarchy "forest" searching. The computer-monitored data showed that there was no significant difference between the success of each group in solving six simple queries (retrieve one document describing a specific course) or in solving six compound queries (find all documents conceptually related.) However, the multiple hierarchy required fewer steps and less time for the simple queries, but more for the compound ones, due to mistakes made by users in the extra step required to display the context. The authors concluded that the forests search is a useful indexing strategy, but that it is important to reduce the number of menu pages required to arrive at a retrieval solution.

Videotex retrieval designs may have long-term cultural consequences, too. In a very creative article Grande (1980) suggests that the online relational/keyword search process has some characteristics of oral culture: Inverted file structure removes words from grammar; meaning is established largely by context; indeed, "grammar and linear subject-predicate-object bonding are antagonistic to healthy search strategies" (p. 128). Given topics are not treated consistently across data bases, indexers, or time, so a user cannot predict all contexts. Search strategies require intuition, typically multiplied over all synonyms. Retrieving unexpected contexts, say by completion of truncated words, is a learning process that is frustrating to novices, but leads to wider associations of concepts. Early training on videotex might lead to "a flexibility in word association and concept analysis that engenders a capacity for dealing with unexpected situations without anxiety" (p. 130), and, we would add, to increased susceptibility to playing with words through electronic newsreading.

Videotex Design Issues: Visual Aspects

Linkage between physiological/psychological studies of visual perception and videotex reading is provided in a thoughtful discourse by Mills (1982). His goal was to extract implications for the use of graphics in videotex from perception research. A few intriguing conclusions follow:

(1) A general problem is "to understand how a picture can serve as a 'conceptual base' facilitating the comprehension of text and how text can guide the processing of a picture." Visuals tend to generate multiple propositions, and are not good for formulating about past, future, or conditional events, or logical inference chains.

(2) However, "pictures departing from photographic realism . . . may be more easily and quickly identified than photographs of the real thing," possibly because they are more easily fit to "mental schemas." Thus videotex line graphics may be more effective and efficient (in terms of transmission time) than photo-graphics.

(3) Complex ideas may be transmitted by simple graphic imagery; this is particularly true of dynamic graphics showing transformations that tend to aid productive thinking and problem solving. "Sequence" rather than "motion" may suffice, and would be possible on videotex.

(4) Individual differences play a large part in people's ability to use and learn from graphics, such as maps.

(5) Ad hoc use of graphics may only increase transmission time and not automatically increase videotex usefulness.

Some related aspects of this body of research were specifically tested in the WETA Teletext project (Champness and deAlberdi, 1981). They conducted three rigorous, small-sample experiments to (a) find the main evaluative dimensions of teletext pages; (b) assess the stability of these dimensions over people and situations; (c) assess the validity of using slide simulations of screen graphics by comparing them with actual teletext graphics; and (d) assess specific page designs on users' reactions and information recall. The authors found evaluative dimensions to be stable across situations and subjects. They also found slide simulations of screen graphics to be comparable to actual teletext graphics.

Champness and deAlberdi's review of the literature on effects of page layout on readability concluded, in part that (a) segmenting text by paragraphs and indentations helped, but that bullets did not; (b) underlining, boldface, and color may help in scanning but not in memory recall or reading time; (c) color theory is applicable; and (d) readability and aesthetic appeal are different dimensions.

Champness and deAlberdi report the following three specific findings:

(1) Based upon 15 semantic differential scales, three dimensions of nearly identical strength and composition emerged in each experiment: attractiveness (explaining from 50% to 77% of variance), clarity (from 18% to 31%), and usefulness (from 5% to 12%). Attractiveness included colorful, cheerful, dazzling, exciting, bright, interesting, and warm. Clarity included organized, straightforward, clear, and easy. Usefulness included useful, meaningful, important, and relevant.

(2) These scales discriminated very significantly among the multiple page designs intended to represent a continuum of complexity and graphic content.

(3) Attractiveness increased with increased color and graphics. The maximum clarity was obtained with paragraphs and color-coded keywords. There were no effects of page design on memory for information (recall). Further, Foster and Bruce (1982) found that color-coding columns degraded the performance of the 96 subjects attempting to locate a target entry, while color-coding of rows had no effect on performance. It seems that the attractiveness of color is unrelated, at best, to performance or recall.

Merging these findings with ludenic newsreading theory is difficult, because the methods of inquiry are at great variance. However, it is interesting that utility (usefulness) is but one dimension along which subjects evaluate teletext screens. The existence of the other dimensions (attractiveness and clarity) is suggested by Stephenson's propositions about communication pleasure in the newsreading interlude.

As a footnote, one major factor in attitude development toward reading is whether the child perceives reading as fun or interesting (Alexander and Filler, 1976; Mason, 1980). Not only do graphics and interactivity stimulate interest, but electronic text itself may be intrinsically more motivating than printed text (Paisley and Chen, 1982). All these notions are consistent with propositions regarding communication pleasure.

Diffusion of Videotex

Some media—for a variety of reasons, including economics, regulatory policy, and technological hurdles—have diffused more rapidly than others. The number of years (rounded) needed to achieve 50% U.S. penetration are given for selected media by Carey (1981a) and Tydeman et al. (1982): newspapers (100+ years), telephone (70 years), color TV (17 years), AM radio (10 years) and black and white TV (10 years). It has taken cable TV 30 years to achieve 20% penetration (see Figure 2.2). The prevailing estimate is that 7% of U.S. households will be using videotex by 1990. (Markoff [1982] and Tydeman et al. [1982] give projections through 2000 for various aspects of videotex.)

Many studies show that at a fair number of pilot users would be willing to pay for actual videotex services—from 43% (Irving, Elton, and Siegeltuch, 1982) to 76% (Eissler, 1981). A survey televised over 16 regional markets showed a willingness to pay for videotex in general by 50% (Marketing News, 1982). The typical monthly dollar amount is around $10-$15 (Rice and Paisley, 1982).

Some primary system attributes deemed important are reduced access time (Elton, Irving, and Siegeltuch, 1982; Ragland and Warner, 1981; Rice and Paisley, 1982), more interactivity than menu selection alone can provide (Drewalowski, 1983; also Gaffner, 1983 ["the presence of menu-oriented news services is in itself not a determining factor"]), good graphics (Drewalowski, 1983; Elton et al., 1982), and the reduction of household time spent in transactions or obtaining news and shopping information (Times Mirror, 1983).

Studies by the Associated Press, the Washington Post research department, and Butler Cox and Partners Limited provide basically the same user profile of the potential videotext subscriber (Broadcasting, 1982; Butler Cox, 1980; Editor and Publisher, 1982a,b,c). Evidence compiled by these firms suggests that the typical (initial) user will be male, white, college educated, between the ages of 25 and 45, of managerial or professional status, and earning in excess of $30,000 per year. These characteristics seem to correspond quite highly with the characteristics of "heavy users" of both magazines and newspapers as determined by Simmons Market Research Reports (1979), except that these users are

slightly older (35-54), not specifically professional, and specifically reside in a 1-2 person household for the newspaper reader and in a 3-4 member household for the magazine reader.

In terms of psychographic characteristics, one report termed the potential user as a "vanguard" (Kagan, 1983). While not defined in the report, potential users could be categorized as upwardly mobile, career oriented, and participating in more outdoor and culturally oriented leisure-time activities. Perhaps psychographic characteristics of the potential videotex user will resemble those of the heavy print user. Heavy magazine readership life-style includes: enjoys reading, attends fine-arts activities, self-confident, pro-business attitudes, nonresistant to social change, above-average vacationing and travel, has negative advertising attitudes, and is not typically family oriented (Crask and Reynolds, 1980).

Using adoption categories more familiar to communication research (see Chapters 3 and 7), Dozier and Ledingham (1982) led two two-hour-long focus groups consisting of six couples who were cable subscribers in generating positive and negative attributes of videotex after a half-hour demonstration of a system. Comments were later grouped into the five primary attributes of innovations evaluated by potential adaptors. With respect to *compatibility*, "computerization" was seen as a negative aspect not conforming to current values; there was a perceived trade-off between convenience and privacy. This finding was also reported by Marketing News (1982), although the Times-Mirror survey reported that 87% did not fear lack of privacy. With respect to *relative advantage*, other social functions of activities facilitated by videotex (such as social interaction) were seen as negative by some (such as reducing personal sociability) and positive by others (such as reducing waiting in lines). With respect to *complexity*, videotex was generally seen as complex, involving considerable learning. Tryability and observability would be improved by seeing others use it in their homes. Subjects also discriminated between read-only surveillance services (positively evaluated) and read/write transaction services (more negatively evaluated).

Bolton (1983) tested these adoption categories along with AIO/life-style measures (activity, interest, and opinion), sociodemographic variables, and measures of "innovative" consumers, as part of the Channel 2000 pilot involving 144 people in 71 houses over three months. The service provided free library, encyclopedia, banking, education, and community information and services. Based on upper and lower levels of the amount subjects would pay for the service before, during, and at the end of the pilot, the strongest contributors in the discriminant analysis were the innovation attributes of compatibility and relative advantage. With modest discrimination, and only at two time periods, shopping venturesomeness and positive evaluation of TV for entertainment also contributed. Heavy prior computer users and innovative consumers were less willing to pay—perhaps because they are more critical consumers and thus aware of videotex limitations. Standard sociodemographic indicators did not distinguish among payment levels. Bolton suggests that consumers must understand the relative advantages of videotex, as an aid in one's

daily life. Videotex services should fit into and expand current consumer values, needs, and past experiences, including TV as an entertainment medium.

Videotex Usage: Amount and Categories

Usage statistics by themselves are not particularly informative. We typically find a wide range: from 14% of all subjects reporting daily use of televised text as part of a pay cable service (Ruchinskas, 1980), 25% per day for agricultural information (Rice and Paisley, 1982), to over 60% at least once a week for generalized/transactional services (Drewalowski, 1983; Telephony, 1983). Most pilots found decreased usage figures after the initial novelty wore off and technical problems discouraged users (Elton et al., 1982; Rice and Paisley, 1982), although a commercial service reported subsequent continued growth in usage (Times Mirror, 1983). Typically the initially most frequent users show the greatest reduction in usage over time (see also Rice and Case, 1983).

However, correlates of usage may be informative. Ruchinskas (1980) analyzed questionnaires returned by 70% of the 534 Los Angeles residents who were contacted by telephone, from a list of 1097 pay cable subscribers. Those who reported using TV text more often were younger, were more interested in home telecommunications innovations, used radio and TV more, used TV more for excitement, and were generally satisfied with TV. Frequent users were less likely to report that they used TV to learn about themselves; there were no education or income differences. The most frequently updated frames are typically used most frequently, and increased updating influences increased usage in general (Connelly, 1983; Irving et al., 1982). Typically the more pages in a category, the more frequently that category will be used, although requests for the subsequent pages drop off dramatically (Elton et al., 1982; Rice and Paisley, 1982). However, Irving et al. (1982: 6) reported that even though the page contents of their trial system were dramatically changed halfway through the pilot, the level of system use remained the same: "This may be an indication that our sample households had developed *fixed habits of use* which were not affected by the change in system content." The emergence of habitual videotex usage is predicted among mature newsreaders by the ludenic newsreading theory. On the other hand, there was also little variation in the type of frame accessed in the grain county of the Green Thumb pilot, "while livestock county usage showed heavier market frame access during periods of buying, storing and selling of farm products and supplies" (Rice and Paisley, 1982). Utilitarian motives as well as communication pleasure influence usage of videotex services.

From the Green Thumb videotext evaluation (Maloney, 1982; Paisley, 1983; Ragland and Warner, 1981; Rice and Paisley, 1982) the most succinct (discriminant) analyses showed that 40% of the *system-monitored* use was predicted by farmers' being more innovative and valuing weather

frames more, while no independent variables significantly entered the equation for *reported* use. Older farmers found more utility in the system. A very similar system and evaluation is reported by Ettema (1983). That pilot involved 188 farmers over an eight-month period. Ettema's analysis of the 74% who returned the mail questionnaire showed that information-seeking benefits were predicted by lower age, lower income, fewer personal contacts, and greater marketing information interest. Positive evaluations of electronic newspapers was predicted by more innovativeness, less newspaper reading, yet greater news interest by respondents. Here, no variables significantly predicted system-monitored use; use was also unrelated to the perceived value of electronic newspapers. Ettema concluded that usage of the farm information and the electronic newspaper systems essentially were not strongly predictable because it is hard to predict who benefits most, yet even the small amounts of variance explained still might indicate potential inequities in access to benefits. (Rice and Paisley argue from a similar finding that benefits are homogenously accessible.) High levels of use may not necessarily be synonymous with high levels of benefit, because some users may value the fact that they can get exactly the information wanted without much tedious use. However, the analysis that described users' evaluations of the *idea* of an electronic newspaper indicates that system usage is not related to specific *actual* information in spite of subjects' reported greater *interest* in news.

Content Categories of Videotex Use

As with frequency of usage, the rankings of content categories vary with respect to use and popularity across systems. Variance may be largely attributed to the fact that services differ in their target audience, in the kinds of information they provide, and in the amount of information they provide. Arlen's (1983) review finds considerable similarity in trial results, with electronic messaging and videogames ranked high, and general interest in news headlines and community reports. Entertainment content (performance, "on view," mind play, "for kids," and electro-art) was accessed second-most frequently in the WETA pilot (Irving et al., 1982); only slightly less than the 41% accesses to index pages. Weather and entertainment were viewed most positively (Elton et al., 1982) and, along with features, were used more than was expected relative to a weighted number of pages. In public places, users tended to scan information items, and seemed to be more instrumental users, particularly with more frequently updated information. Usage figures from the first seven months of Prestel (based upon the top 25 Information Providers, or 60% of all content categories) showed the following percentages of total accesses: amusement 28%, news 27%, leisure 21%, local 10%, and several other categories (Butler Cox, 1980). Ruchinskas (1980) found both browsing and purposeful use in the most popular categories: comparative shopping and weather.

Impacts of Videotex on Usage of Other Media

In all studies except one, no extreme media displacements occurred during the test periods. (See Chapter 12 for a broad discussion of displacement in media environments.) Indeed, 70% of the respondents in the Times-Mirror trial said that they did not want videotex to take the place of other information sources. In the Columbus Viewtel pilot (Harnish, 1981)—a library-oriented service—16% of the 200 homes reported they spent more time reading books during the three-month period and 8% spent more time talking with their children. Ruchinskas (1980) noted 9% of those using TV text channels said they viewed less TV news and read newspapers less frequently. Participants in the Viewtron pilot indicated a 33% reduction in newspaper reading and a 45% reduction in television viewing. Green Thumb farmers ranked their preferred channels for information (Marketing: newspaper, radio, buyers; Weather: AM/FM radio, TV, National Oceanic and Atmospheric Administration (NOAA; "all weather") radio; Farming: magazines, extension services, friends), revealing that videotext never displaced these trusted sources, even if traditional media were more difficult to obtain or less timely. In Ettema's comparable study, greater videotext benefits were associated with less use of other media, but this was perhaps due to prior dissatisfaction with those media, and, in any event, those media were not displaced.

Other Obstacles to Videotex Diffusion

Besides innovation and user characteristics, there are of course other obstacles to the spread of electronic newsreading. While reading is active, viewing video is passive and, thus, may mitigate against some benefits from online information access. Even if a system is designed for browsing, users may be unwilling to do so if they are charged for specific page use. Decoders are expensive. Transactional services using the rapidly-diffusing home microcomputers offer stiff competition. Uncertainties in cable diffusion and incompatible standards will also slow videotex use. Delays in integrated services and networks will not help either (see also Campbell and Thomas, 1981; Easton, 1980; Gollin, 1981; Tyler, 1979).

As indicated, a number of factors unrelated to the internal organization of the electronic newspaper will affect the rate of diffusion, the displacement of other media, and the impact of the electronic newspaper on individual users and society as a whole. All these other factors must be considered and allowed for in analyses of electronic newspapers. At the same time, the internal organization of the electronic newspaper is an important attribute of the innovation. Because internal organization is most directly under the producer's control, considerable attention is properly focused in this area. Here, prior theories of newsreading behavior can provide significant illumination.

THE LUDENIC ELECTRONIC NEWSPAPER

On the surface, organization of the electronic newspaper as a gigantic data base with countless information retrieval options would seem to embrace the convergent selective character of the newsreading interlude. This, however, reflects vulgar extrapolation of the concept to a new situation. The concept of convergent selectivity is properly relegated to the selection of a newspaper title from among a variety of electronic newspaper options. That is, rather than providing individual access to one massive (and forbidding) data base, the "true" ludenic electronic newspaper consists of a number of informational items strung together electronically in a manner that enhances the newsreading play of a particular audience microsegment.

The exact characteristics of an electronic micronewspaper would be determined by the combined behavior of audience segment members and special advertisers, electronic journalists and editors, and data-base providers and indexers. Newsreaders of the artificially "mass" pulp newspaper audience—made mass by the pulp production and distribution demands rather than an objective generic agenda of information "needs" (McCombs and Shaw, 1977)—are set free to select for themselves from a number of electronic micronewspaper titles.

Stephenson provided a number of suggestions to pulp newspapers to enhance play opportunities for readers. These suggestions are equally valid for the electronic newspaper. He suggested that newspapers "induce and encourage . . . regularity, order and perspective" when a developed or mature audience is sought.

> The editor has to make his newspaper interesting; for some readers this can be achieved by primitive play conditions, such as are characterized more by a scattering of the mind than by well-developed absorption. Sophisticated newsreading is contemplative rather than scatterbrained [Stephenson, 1967: 151].

Given the quantum reduction in production and distribution costs inherent in electronic newspapers, convergent selectivity is served through microsegmentation of the newspaper readership. This flows from the technical flexibility to produce an electronic micronewspaper title, using minimal staff who can access various machine-readable data bases.[4] These pieces of information are then assembled—"edited" in the precise sense of the word—in forms that enhance the newsreading interlude for the microsegment.

The key to successful development of electronic micronewspapers is development of forms consistent with the type of play that characterizes the newsreading interlude. Vital to such play (at least for audience microsegments at the "mature" end of the play continuum) is regular and consistent style or form of presentation. *The indexing of information must become part of the subjective play of the newsreading interlude.* True ludenic newsreading cannot be transformed into a task-oriented drudgery of data-

base manipulation and intricate information-recovery protocols, as now required by many videotex systems. To do so is to take newsreading out of the realm of play and into the world of work and task accomplishment (see Paisley, 1980). Such systems will attract only nonpleasure readers; mature and pleasure readers will find little communication pleasure.

LUDENIC DESIGN IMPLICATIONS

On a practical level, how does one go about designing a ludenic, electronic micronewspaper? First, one must have a clear idea of the newsreading microsegment for whom the electronic newspaper is to be edited. Smith (1980: 135-157) argues that the newspaper is becoming more like a special interest magazine. He provides an excellent overview of this microprocess in the magazine industry. Stephenson's mature and pleasure newsreaders serve as a starting point. As empirical experience grows, Stephenson's theoretical types will be elaborated into increasingly sophisticated "fixes" of key audience microsegment characteristics. Second, task-oriented, goal-directed menu searches should stop (at least temporarily) with the selection of the micronewspaper title. Recall that the pulp newspaper has developed a number of conventions that ease the reader into the mass of information it contains, conventions that enhance ludenic play throughout the news-selecting process. Sections, indexes, headlines, subheads, boldface, windows—all are techniques used to signal or cue the newsreader as to the relative importance, priority, value, or meaning of the various pieces of information that make up the newspaper. Putting pulp newspaper content on the screen as an electronic newspaper is akin to a radio newscaster's reading the daily newspaper aloud from front to back. A new medium requires a form of presentation unique unto itself. New design forms must vie for support against the formidable "default" design option: simply dumping text from available data bases onto a videotex system.

Despite the absence of an accepted form and grammar for the electronic micronewspaper, some basic design principles flow from ludenic newsreading theory. One such extrapolation is the MORE/NEXT strategy for information presentation. Figure 5.2 provides a model for a ludenic electronic newspaper, using the MORE/NEXT strategy for accessing news. The abbreviated screen pages across the top of Figure 5.2 are similar to the one- and two-sentence indexing descriptions that many newspapers have adopted. For example, the March 12, 1982, issue of the *San Francisco Chronicle* included the following indexing description in the "Top of the News" for a main story and sidebar:

> *John Belushi's widow* has a number of questions about his death. Page 5.
>
> *Speedballing*—the use of heroine and cocaine simultaneously—is becoming more popular among the well-to-do. Page 5.

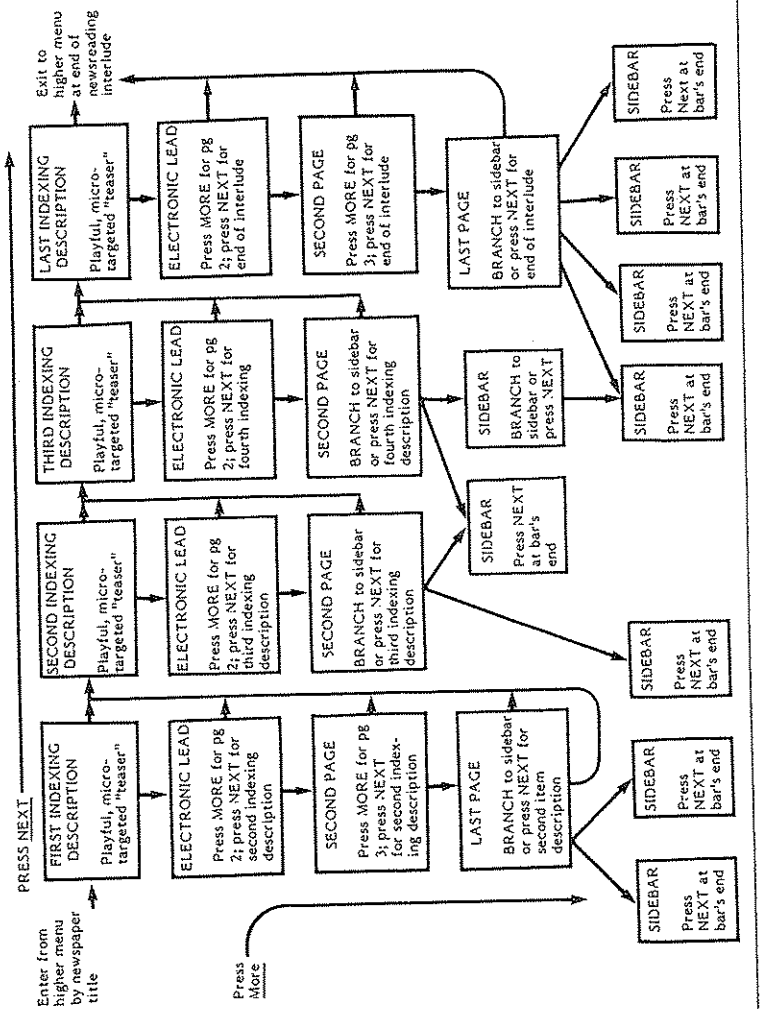


FIGURE 5.2 Design for a Ludenic Electronic Newspaper

The index descriptions, linked in an electronic chain by the electronic micronewspaper's editors, provide a highly targeted summary of the day's news as well as serving as indexing teasers for additional information about the particular news items. After reading each indexing description, the newsreader is faced with a simple choice: MORE about the same news item or display the NEXT indexing description in the chain. Indexing descriptions should be written in a manner that enhances the ludenic character of the information retrieval process. Rather than using a universal style for such descriptions, each electronic micronewspaper would develop styles consistent with characteristics of its newsreader microsegment that self-selects that newspaper title as its own. The number and length of stories to be included in an electronic micronewspaper would be determined by the characteristics of the self-selecting microsegments. However, style as transmitted by typefaces may be a major problem for electronic newspapers.

If an individual newsreader in the newsreading microsegment apperceives a story to be especially tied to prior interests, then the MORE function key on the keypad is pressed. The reader moves down through the story, learning more detail with each screen page.[5] What happens at the end of the story? Here a new menu appears. Various electronic sidebars —relational indexes— related to the main story could be listed by headline or short description (teaser indexing descriptions perhaps). This provides the reader an opportunity to pursue an apperceived interest in still greater detail, in convergent selective fashion. As indicated in Figure 5.2, various sidebars may be accessed from menus at the end of several main stories. In addition, sidebars can provide their own menus at the end leading to still more sidebars. When reader interest plays itself out, the NEXT function key takes the reader to the next indexing description.

Where does advertising fit into all this? First, microsegmentation and reduced production and delivery costs may permit some electronic micronewspapers to be subscriber supported. On the other hand, experiences of the specialized magazine industry suggest that advertising takes on special attractiveness to the reader when advertisers appeal to the special characteristics, interests, and convergent selective options of a narrow readership. Location of advertising messages in the matrix displayed in Figure 5.2 will depend on the characteristics of the audience microsegment. One ingenious strategy for handling advertising in a communication-pleasure and communication-pain framework allows the reader to skip a screen page of advertising and go on to the next page in the chain. For the reader who calls up the advertising page on the screen, an electronic payment or discount is credited toward the reader's cost of using the videotex service.

These theory-based recommendations should be combined with other findings outlined in previous sections. These other recommendations include

(1) fostering use and diffusion among groups of users, including public places;
(2) stabilizing the location of types of information;
(3) providing index support in portable paper form;
(4) downgrading excessive and sole reliance upon indices;
(5) facilitating browsing habits;
(6) avoiding discrete unit pricing;
(7) blending videotex with prior services;
(8) providing electronic messaging and games perhaps as an integral part of the newsreading service;
(9) shifting marketing philosophies as the service diffuses;
(10) considering individual attitude and physiological differences (such as poor reading skills, bad eyesight, arthritic or large fingers);
(11) increasing designers' awareness of age-specific social responses to system problems;
(12) avoiding prior expectations from other media usage;
(13) fitting content, timeliness, and form of information into a new or complimentary medium rather than a displacing medium;
(14) using graphics appropriately;
(15) differential updating and content access for psychographic user groups and time periods; and
(16) creating nonhierarchical data-base and retrieval processes, including vertical, horizontal, and relational access (Carey, 1981a; Elton and Carey, 1983; Schabas and Tompa, 1983).

TESTING THEORIES OF NEWSREADING

The emerging videotex news services are implicit tests of the uses and gratifications perspective, with the assumption that ulterior motives drive the information retrieval tasks. Ludenic newsreading theory suggests that viewing newsreading as a goal-directed information retrieval task ignores the essential communication pleasure of newsreading as an end in itself. As such, emerging videotex systems— as presently designed—stand ready to service financial and work-related tasks of a small nonpleasure elite who need access to news-type data bases to accomplish certain goals and objectives. This segment may well support such services at a moderate level but is insufficient for widespread, particularly residential, adoption. However, it may be the only segment that can cost-justify videotex usage in the near future.

Mature and pleasure newsreaders, on the other hand, are not well served by such systems. What ludenic newsreaders require is an *edited* product, shaped narrowly enough in form and content to permit convergent selective processes to occur *through* protocols that are pleasurable ends in themselves. The electronic newspaper—like its pulp predecessor—must organize the news of the day in a manner that reassures its reader through its regularity and consistency of style. The electronic newspaper keeps newsreading in the realm of subjective play by taking the work-related and task-related assumptions out of the system design. The ludenic electronic newspaper guides its newsreading microsegment through the playful steps of reviewing the major events of the day, as those events are apperceived by that microsegment.

We may envision overtly playful aspects in electronic newsreading, such as comics taking the form of short videogames, or sounds and visual effects supporting the content as it is browsed.

A modest test of newsreading theory and electronic newspapers was conducted by the Center for Communications at San Diego State University. In that study 107 subjects were identified through random-digit dialing of San Diego households, with selection of subjects stratified by age, gender, and cable subscription status. Using a single-group, pretest-posttest design, subjects were provided a 30-minute demonstration of an electronic newspaper on a computer programmed to simulate an operational electronic news service. In a subset of this study, 50 of the subjects actually operated a fully operational information package. Using specialized function keys, the electronic newsreader could move up and down menu structure, scan stories, and move about at will in that information package. While the study was funded to answer other research questions,[6] a study of newsreading theory was piggybacked.

In a pretest interview, subjects were asked whether they agreed or disagreed with several attitude statements toward newspaper reading. A five-point, Likert-type scale was used. One item stated, "I only read a newspaper when I need to get specific information." The item was adapted from Stephenson (taken verbatim, but used as an attitude statement instead of a discriminating item in a Q-sort) measuring the kind of purposive-only newsreading behavior of the type he termed "nonpleasure reader." The item is also a measure of the goal-directed newsreading that the uses and gratifications perspective suggests motivates all newsreading behavior.

During pretest interviews, subjects also indicated agreement or disagreements with the next statement: "Newspaper reading is a habit for me; I really miss it when I don't read it." This item was again adapted from Stephenson as a measure of the newsreader type he termed "mature newsreaders."

Subjects were also asked to indicate how much they would pay for an electronic news service, in addition to the standard $10 per month basic cable fee. (The initial study was based on the assumption that services would be transmitted via two-way, interactive cable systems. The effort in this item was to separate the cost of electronic text services from other, cable-related charges.) The question was posed in the pretest interview, following a brief, single-page description of such a service, which subjects were directed to read. The average price for the 57 subjects in this portion of the experiment was $8.24. The question was again posed in the posttest interview, after the subjects had experienced an electronic news service for about a half hour. The average price given rose to $12.98.

The relationship between goal-directed, purposive newspaper reading and willingness to adopt an electronic news service is striking, given that two media are involved. Prior to the electronic news service simulation,

respondents who read newspapers only for "specific information" were generally willing to pay more for the electronic service. (Pearson R = .23; N = 88; p < .05). Following the simulation experience, the correlation remained largely unchanged (R = .25; N = 92; p < .01).

Interestingly, the mature newsreaders who are habitual newspaper readers and who miss the newspaper when they don't read it were predisposed *not* to adopt an electronic news service. During the pretest interview, willingness to pay for electronic news services tended to be negatively, but only slightly, correlated with a mature newsreading (R = -.15; N = 78; p < .10). After the simulation experience, any relationship between mature newspaper reading and willingness to pay for electronic news services disappeared (R = -.06; N = 81; p < .30).

To put these findings in context, consider the fact that the electronic news simulation was designed to replicate closely videotex services on Cox Cable's Indax interactive cable service. The Indax system is a menu-driven system that reflects the goal-directed, information-seeking characteristics of nearly all prototype videotex systems. Further, the written description of videotex services provided to subjects during the pretest interviews also stressed this orientation to videotex services. Thus, nonpleasure readers do not use newspapers as ends in themselves but as a means of accessing information for other purposes. People who use newspapers this way are also willing to pay for electronic news services. Mature newsreaders who use the newspaper in an elaborate, ritualized play interlude recognize little play in this form of electronic newspaper. When such a service is described to them, mature newsreaders are somewhat resistant to electronic news. This resistance disappears following direct experiences with such an electronic service. However, mature newspaper reading and adoption of electronic news services remain, in the end, orthogonal.

SUMMARY

Several bold suggestions for electronic news services can be drawn from these findings. First, nonpleasure readers who use newspapers only for specific information find videotex news services attractive. Second, an important section of newspaper readership is neither attracted nor repelled by the concept and the simulation of an electronic newspaper. Such newsreaders perhaps remain to be convinced. The ludenic electronic newspaper is more labor intensive and more expensive than the "default" dumping of machine-readable text onto a videotex system. Yet the highly edited ludenic electronic newspaper may be the most prudent investment in the long run. Failure to attract mature and pleasure newspaper readers to the new medium has costly implications for those with financial or other interests in electronic newspapers.

NOTES

The authors gratefully acknowledge the technical assistance and observations of Dean Hallford, Department of Music, and Wayne Towers, Department of Journalism, San Diego State University.

1. Many cable systems provide screen frames of wire copy for a preset length of time. The user experience parallels that of TV and radio news consumption. The user is wholly passive and powerless in manipulating the rate and contents of the news provided.

2. The nonportability of the electronic newspaper is not a permanent technical limitation. Rapid advances in liquid crystal displays and "downloading" of data on a periodic basis to microcassettes or microdisk systems may eliminate the nonportability of the electronic newspaper.

3. CompuServe is a national videotex service based in Columbus, Ohio. CompuServe has entered into agreement with the Tandy Corporation to provide videotex services to purchasers of Radio Shack's TRS-80 personal computers. Radio Shack is a Tandy subsidiary. Complete CompuServe videotext menus appear in *Update* (February 1982), a consumer newsletter of the CompuServe Information Service Division. Related material may be found in *Today Magazine* 1 (July 1981), another publication of the CompuServe Information Service Division, 5000 Arlington Center Blvd., Columbus, Ohio 43220.

4. Rice and Paisley (1982) emphasize, however, that demands on staff to maintain updated information for videotex systems may be far more than an unprepared organization can support, leading to user dissatisfaction and rejection of the system.

5. The style of writing text for screen display is not a developed form. The screen is limited to about 50-70 words. The reader consciously decides at the end of each screen display to branch to the next page in the sequence or go on to new material in another category. Different styles of writing are likely appropriate to different applications and different readerships.

6. The study was funded by HomServ, Inc., a subsidiary of American Can Corporation. The study, "Videotex Topic Preferences Study," sought to identify content interests among potential adopters, as well as to develop principles of screen and system design. Principal investigator was John Witherspoon, director of the Center for Communications. Project director was David Dozier, Department of Journalism.