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The Growth of the French Videotex System and Its Implications for Consumers

ABSTRACT. The French telecommunications authority (DGT) is embarked on the world's most ambitious effort to make videotex into a mass medium. The decision to distribute terminals (Minitels) free of charge as well as a unique approach to pricing services have generated substantial interest in the French Télétel system. This article describes and analyzes: (a) the reasons why this multibillion dollar gamble was undertaken, (b) the major elements of the French videotex system, (c) various measures of the system's progress to date, (d) the major types of services offered, (e) patterns of consumer use, (f) consumer problems and policy issues associated with the videotex medium, and (g) the prospects of the French videotex system taking hold in other nations.

About a decade ago, the main topic of debate regarding videotex was whether, on balance, its social effects would be positive or negative (Mosco, 1982; Tydeman, Lipinski, Adler, Nyhan, & Zwimpfer, 1982). Videotex was regarded as an "electronic Klondike" (Carey, 1982); it was taken for granted that videotex would be a successful communications technology, following in the footsteps of the telephone, radio, and television.

Accepting the assumption of videotex's inevitability, organizations representing consumers attempted to anticipate the potential problems posed by the new medium. In Great Britain, a variety of consumer organizations and government bodies, including the Consumers' Association and the National Consumer Council, were represented on the Prestel for People Project. The French established two supervisory commissions: one to study the implementation of the French videotex system (Télétel), the other to guard against threats to individual freedom and privacy.

Multinational consumer organizations also offered their assessments of videotex's likely impact on consumers. The European Bureau of Consumers Unions (Venables, 1984) expressed particular concern about advertisements masquerading as impartial consumer information and about the various problems associated with conducting transactions via videotex (e.g., verifying the terms of the purchase agreement). The International Organization of Consumers Unions (IOCU) passed a resolution which rejected the view that new

information technologies could be ignored as irrelevant to the daily lives of ordinary people. IOCU (Mitchell & Murley, 1984) passed a resolution which cited a number of the possible dangers of videotex and associated technologies: (a) a widening gap between the "information rich" and the "information poor," both within and between nations; (b) threats to individual privacy; (c) the increased ability of businesses to manage world markets and evade national controls; and (d) the creation of a single, homogeneous, commercial world-wide culture which dilutes national cultures. The Committee on Consumer Policy of the Organization for Economic Co-operation and Development summed up the degree of scrutiny given to videotex by consumer leaders with the statement that "rarely has the birth of a new medium been so carefully handled" (1982, p. 19).

Recently the terms of the videotex debate have changed drastically. The debate is now between those who cautiously believe that, despite numerous setbacks, videotex will eventually become commercially viable among ordinary consumers (as opposed to professional users) and those who are ready to relegate videotex to the technological junkheap. Accordingly, consumer policy concerns have receded until either the optimists or the pessimists are proven correct.

For videotex optimists whose spirits are flagging, a visit to France is the tonic. It is there where videotex has enjoyed its greatest success among the general public and is making its last stand. Most casual followers of the videotex scene have probably heard that the French telecommunications authority (DGT) has been distributing videotex terminals free-of-charge to millions of telephone customers. Yet, beyond this, accounts of the French videotex system in the English language have been confined to one or two pages in newspapers and magazines. The purpose of this article is to both describe in some detail and analyze the French videotex initiative. Particular attention will be devoted to patterns of consumer videotex use and consumer problems associated with the videotex medium.

BACKGROUND

The Reasons for the French Videotex Investment

The French government's decision to invest heavily in videotex was the result of at least three factors (Charon & Cherki, 1984). First,

the modernization and extension of the French residential telephone system during the 1970s created an industrial sector highly dependent on large government orders for telephone equipment. By 1978, it was clear that a saturation point was quickly approaching; a new direction was needed for the industrial machine created by the French telecommunications authority during the period of telephone modernization.

Second, the very process of improving the French phone system caused a serious deterioration in the quality of directory assistance services in France. The number of telephone lines (including both residential and business) more than doubled in France between 1974 and 1979, with an average of more than 1.5 million lines being added to the network every year during that period (Direction Générale des Télécommunications, 1984). As a result, paper telephone directories were quickly obsolete, and directory assistance services became jammed. Some type of automation of the directory assistance function seemed called for.

Third, France was especially hard-hit by the worldwide economic recession which followed the rise in petroleum prices in the mid-1970s. Unlike the United States, where the recession was largely viewed as a temporary "energy crisis," the French saw the recession as part of a more fundamental and long-term reordering of the world economic system. In the French view, countries without natural resource advantages needed to master and export new technologies, especially those related to computers; and government action might be needed to promote the transition to the "telematic" future (Nora & Minc, 1980).

The French national telecommunications laboratories (the Centre National d'Études des Télécommunications and the Centre Commun des Etudes de Télécommunications et de Télévision) had developed state-of-the-art videotex systems, but it was unclear how to make them commercially viable. On the demand side, what would make consumers purchase terminals to deliver services of unknown quality and value? And on the supply side, what incentives existed for service providers (e.g., banks, retailers, publishers) to invest in providing videotex services until a substantial number of customers owned terminals?

The solutions to the problems of commercializing videotex and alleviating the directory assistance problems converged: provide directory assistance information as a videotex service and distribute

simple videotex terminals to phone subscribers free-of-charge! The telephone authority was already engaged in the costly practice of distributing free phone books. The videotex terminal would simply substitute for the books. In addition, if produced on a massive scale, the cost of the terminals could be minimized.

The cost of equipping French homes with videotex terminals as well as operating a national videotex network would undoubtedly be high, but so were the potential savings and new sources of revenue. These included: (a) savings in the staffing of directory assistance, (b) reduced costs of printing and distributing paper telephone books, (c) revenues from the transmission of non-directory (i.e., fee for service) videotex traffic, (d) revenues from the electronic directory from users exceeding limits on free use, (e) revenues from the sale of advertising space on the electronic telephone directory, and (f) revenues from the rental of terminals with features beyond those of the basic, free terminal (Cozanet & de la Brunetière, 1986; David, 1986). Added to these direct cost savings and new revenues are the more indirect benefits of creating jobs, providing France with a potential source of competitive strength in the world economy, and diffusing computer familiarity and expertise in the French populace. Thus, despite misgiving in some quarters (especially by newspapers fearing a loss of advertising revenue to the new medium), the case for the great French videotex experiment had been made.

MAJOR FEATURES OF THE TELETEL VIDEOTEX SYSTEM

The apparent success of the French videotex system is attributable to much more than the free distribution of millions of Minitel terminals (more than 2.5 million by mid-1987). Certainly, the kiosk network — with its methods of pricing and billing for services — and electronic telephone directory have to be regarded as major reasons for Télétel's popularity among both consumers and service providers.

Pricing of Services

As of June, 1987, there were three different pricing levels for Télétel videotex services, each corresponding to a different network (Télétel 1, 2, and 3). With the exception of the electronic telephone directory, the French telecommunications authority confines its role to

transporting services provided by other public and private entities. Thus, the three videotex networks represent different ways of allocating the costs of conduit (transport) and content between the user and service provider. Each network is accessed with its own four-digit telephone number.

Téléétel 1. The services available on the Téléétel 1 network are primarily aimed at professional or business users. Users gain access via an individual password and typically pay a subscription fee. The service provider (e.g., a legal data base or a system for a manufacturer to communicate with its dealers) is in charge of billing and collection from clients. Users also must pay 7 francs per hour during peak time periods for connection to the local telephone network ("Les nouveaux tarifs Téléétel," 1987). All other telecommunications costs are paid for by the service provider and are incorporated into the price of their service.

Téléétel 2. The services available on the Téléétel 2 network are more oriented to the general public than those on Téléétel 1. They are also more expensive, costing about 22 francs per hour during peak periods. (Off-peak discounts can be as much as 65%.) The charges incurred by a consumer are included in his or her bimonthly telephone bill and are retained by the telephone authority to cover the costs of communicating on its data and telephone networks. Service providers are free to require subscriptions of their customers, but most do not, feeling that it would discourage use of their service. Banks, which typically charge a nominal subscription fee, home-shopping services, and tourist information services are examples of services commonly found on the Téléétel 2 network.

Téléétel 3 — Le Kiosque. The kiosk network accounts for over 70 percent of the total videotex traffic (excluding the electronic directory) and an ever greater percentage of the traffic generated by the general public (Direction des Affaires Commerciales et Télématiques, 1986). The name kiosk derives from the fact that this network was originally intended to be an electronic version of a street newsstand. When using the kiosk network, the user pays for both the costs of communication and the costs of the service itself at a combined rate of about 58 francs per hour. (There are no off-peak discounts.) The consumer's videotex charges are assessed and col-

lected every two months along with a person's telephone bill. Of the 58 franc amount, the telephone authority retains its 22 francs (the equivalent of using the Télétel 2 network during peak hours) and remits the remainder to the service provider's host computer. (There is some competition among hosts regarding the size of their "cut.")

The popularity of the kiosk mechanism took both service providers and the telephone authority by surprise. It was anticipated that the majority of consumer services would be offered on a subscription basis (as is the case for some videotex services in other countries). However, consumers quickly demonstrated their preference for the spontaneity and anonymity afforded by the kiosk system. Even services which offered consumers prepurchased blocks of time at a discount rate met with little success.

Service providers also found the kiosk system to their liking. For one thing, it encourages "browsing" by consumers, thereby making it possible for a service to be profitable by attracting many light users rather than a few heavy ones. Moreover, the kiosk pricing mechanism relieves service providers of the task of billing and collection.

The major problem with the kiosk network — from the point of view of users and many service providers — is its high and unitary price level. How many information and communication services are worth 58 francs/hour to an average consumer? If a person is interested in comparative product testing data, for example, an entire year's subscription to a product testing magazine like *Que Choisir?* or *50 Millions de Consommateurs* can be had for the price of two hours of electronic consultation (and even less if one responds to price promotions).

Ironically, many of the most popular services are among the least expensive to provide. For example, dialog services, bulletin boards, forums, and electronic mail require relatively little in the way of expensive data base accumulation and management; as a result, they are highly profitable. Some providers could lower the price of their service and still remain profitable. Indeed, lowering their prices could make some services even more profitable by attracting substantial numbers of new customers. On the other side of the coin, some providers can imagine services for which consumers would be willing to pay more than 58 francs/hour but which cannot be offered profitably at that price. In short, there is no price competition on the kiosk network. In such a one-price world, some items are inevitably overpriced, while others fail to reach the marketplace at all.

Because of the problems inherent in a one-price kiosk system, there have been repeated calls by service providers for a multi-level kiosk system as well as repeated promises from the telephone authority to implement one (Monchy, 1986). Finally, in June, 1987, two new networks were established exclusively for professional and business applications, one of which prices services at 75 francs/hour. There are plans to introduce additional price levels, including a less expensive (15 francs/hour) version of Télétel 2, but the telephone authority has a history of taking its time in implementing price changes (Les nouveaux tarifs Télétel, 1987).

The Electronic Telephone Directory

The nationwide electronic telephone directory also must be considered a key element in the success of videotex in France to date. Not only does the directory provide a rationale for the free distribution of terminals; it also serves as an "ice breaker" for people who are intimidated by computers. The electronic directory is easy to use, up-to-date, and free (for searches under three minutes). In addition, the directory is national in scope, accommodates mistakes on the part of the user (e.g., incorrect spelling of a party's last name), and is capable of conducting searches which would be difficult or impossible with paper directories or directory assistance operators (e.g., listing all the telephone subscribers living in a particular apartment house). In short, the directory initiates the user, provides immediate positive reinforcement (in most cases), and demonstrates the power of using a computerized data base.

Transpac

The free distribution of terminals, the kiosk system, and the electronic telephone directory are probably the three most important ingredients in the French videotex recipe. A final feature should be included — the "architecture" of the data transmission network. The network is named Transpac because it transmits data by packets. Information is sent to special computers that break down the data into packets according to an established formula. These packets are held in abeyance until a route (or routes) of transmission is available. After transmission, the original information is reconstituted and sent to its final destination. The key ramification of this data transmission

method is that the cost of moving data, and hence its price, is completely independent of the distance between sender and receiver. Price is calculated on the basis of the volume of information transmitted. This system has the effect of unlocking the entrepreneurial energies of service providers located everywhere in France by eliminating any potential cost disadvantage in serving large but distant markets. (Transpac actually carries about 80% of Télétel traffic, with the remainder being carried by local telephone switching networks.)

MEASURES OF THE PROGRESS OF VIDEOTEX IN FRANCE

Since some of the reasons for implementing the French videotex system (officially called "Télétel" but often referred to as "Minitel") are either intangible or long-range in nature (e.g., increasing the computer literacy of the French population, and creating an export industry), it is difficult to truly evaluate the French videotex initiative. This problem is further compounded by the fact that a great deal of the data by which any such assessment would be made are controlled by the promoters of the videotex system — the French telecommunications authority.¹ Given these problems, it is nevertheless instructive to review the two types of data that are commonly cited as measures of the Télétel system's success to date.

The first type of data consists of aggregate data on the number of Minitel terminals in circulation, the amount of Télétel and electronic telephone directory traffic, and the relationship between the two. As of mid-1987, there were approximately 2.9 million terminals in operation. During 1986, there were over 30 million hours of connect time for the Télétel network, plus another 7 million connect hours for the electronic telephone directory system (Minitel videotex, 1987). These figures represent significant increases over 1985. Most important, the rate of increase in videotex traffic is greater than the rate of increase in the number of terminals (Un rythme fou, 1986).

A second indicator often used to measure Télétel's degree of success is the revenue received by videotex service providers and the French telecommunications authority itself. By mid-1986, service providers accessible on the most popular of the three Télétel networks (the Télétel 3 or "kiosk" network) grossed \$53.7 million. This does not include subscription charges collected for largely professionally-oriented services on the Télétel 1 network. The revenues of

the French telecommunications authority were also on the order of \$53 million for the first half of 1986 (Videotex traffic, 1986). For the entire year of 1986, service providers recorded gross revenues of \$135 million.

These revenue figures are impressive, but accounting methods for the system's rate of return can be slippery. On the one hand, annual government revenues in the 1985–87 period were certainly below the 2–3 billion francs invested annually in the system (Ministre des PTT, 1985). Yet, Georges Nahon, director of Télétel's international marketing efforts, claims that France's investment in terminals will be recouped in four years instead of the projected five (France's Minitel success, 1986).

SERVICES AND SERVICE PROVIDERS

Videotex services can be grouped into three basic categories according to the nature of the information flows involved. The first category consists of services which *retrieve* information for consumers (e.g., obtaining the latest weather forecast). The second category is composed of services in which the *transmission* of messages is the most important element (e.g., placing an order for merchandise). The third category encompasses services in which there is a continuous exchange of messages, that is, interpersonal communication (e.g., dialogs, forums, and electronic mail).

Information Retrieval

Information retrieval was foremost in the minds of videotex's original advocates in France and elsewhere. After all, the generic name for videotex in Great Britain was "viewdata." Furthermore, the notion that videotex was primarily a means of information retrieval also explains the intense resistance of newspapers to this new medium in the case of France and the defensive investments by newspaper publishers, in the case of the United States.

Most observers now doubt that videotex will become an important medium of impartial consumer information (Boal, 1984; Carey, 1982; Noll, 1985; Ölander, in press). Nevertheless, it would be a mistake to dismiss the amount of consumer information that is being disseminated via videotex in France. The electronic telephone direc-

tory alone accounts for over ten million inquiries per month (Minitel videotex success, 1987). In addition, consumers make substantial use of services which provide information about travel, world and national events, sports, weather, local entertainment, government activities, and the stock market.

Product testing organizations. As a means of providing consumers with timely, objective, and precise information, videotex has a number of potential advantages relative to traditional media such as magazines and books (Widing & Talarzyk, 1983). Accordingly, consumer testing organizations in several countries have eagerly participated in early videotex systems (e.g., Consumers Union on Viewtron and the Consumers' Association on Prestel). Most of the consumer testing organizations have since decreased their involvement, having become disenchanted because of economic or ideological reasons (e.g., the perception that videotex is used by the upper-middle class, a group whose information needs are already well met).

Both of France's principal product testing organizations — the National Institute of Consumption (INC) and the Federal Union of Consumers (UFC) — have maintained an active presence in the French videotex system. The INC's services are available on the kiosk network and include not only comparative test results but also comparative price data for a limited number of products in France's three largest metropolitan areas, consumer news, practical advice, legal information, informative quizzes, and a message box. Like most kiosk services, the INC's is available 24 hours a day, seven days a week.

Based on a survey of 3,500 users of its videotex services conducted in the summer of 1985, the INC discovered a number of interesting things. The interview was self-administered on the Minitel terminals, of course (see Institut National de la Consommation, 1985). First, only 6.9% of its videotex users were subscribers to their magazine, *50 Millions de Consommateurs* (although over half indicated that they read the magazine "from time to time"). Thus, videotex and magazine appear to be complementary, not overlapping, means of providing consumer information. Second, slightly less than half of the respondents reported consulting the INC's videotex services at least once per month. Third, 42.9% of the survey respondents indicated that they consulted the INC's services from their place of work. Among this subgroup, only 9.3% said that their videotex

consultation was for professional reasons. Finally, the most frequently requested new services that respondents would like to see would deal with credit, especially rates of interest and the size of installments, and recent legal decisions regarding consumption.

To date, INC's videotex services have not been profitable, but unlike its foreign counterparts, INC plans to expand and improve its services (Baudet, 1985). In addition to the credit and legal information services requested by the survey participants, the INC intends to offer new services to help consumers create their own videotex services.

Services currently being offered by INC can also be improved. For example, comparative testing data are available for only about twenty-five product classes. The comparative price data are available on still fewer product classes and in only three cities. Moreover, neither the product tests nor the price information contains the date on which it was collected.

Overall, the INC has not yet fully capitalized on the distinctive advantages of videotex as a means of providing information. One exception is their automobile purchasing service. It allows consumers to compute the costs of ownership, maintenance, and use of alternative vehicles under individually specified assumptions about annual mileage driven, expected length of ownership, amount of down payment, and personal driving record. One can imagine additional services under which consumers might specify the importance they place on various product attributes, set a maximum price, and allow the computer program to select the "best" brand (Widing, Burnkrant, & Talarzyk, 1986).

Because the INC receives substantial subsidies from the French government, it can afford to have a long-term commitment to the videotex medium. The UFC, in contrast, is wholly funded from private sources, mainly the sale of its magazine. Although the UFC's videotex service is available on the low-cost Télétel 2 network, it is also less useful than that of the INC. One reason is that the UFC's price information is confined to the Marseille area. More important, whereas INC's comparative tests are available on-line, the UFC only provides an on-line index of its comparative test reports. The consumer must then write or visit a UFC office to obtain a copy of the actual report.

Summary. In comparison to traditional print and broadcast media, videotex has a number of potential advantages as a source of

consumer information. It can draw on vast data bases to provide specific and individually-tailored information in a timely fashion. To date, in France as elsewhere, the potential of videotex as an information retrieval mechanism has only been partially tapped. For most consumers, videotex is not perceived as having an efficiency advantage over competing media of information provision.

Information Transmission

Like information retrieval, information transmission services are "practical" in nature (e.g., making purchases, conducting banking and financial transactions, even casting votes in elections) and were expected to be motive forces behind the diffusion of videotex (Banque: La locomotive du vidéotex, 1985). Today, substantial enthusiasm persists concerning the future of information transmission services (Rauh, 1985, Talarzyk, 1987), although consumer use of homeshopping and homebanking is extremely limited in most nations (Salmon, 1985; Sepstrup & Ölander, 1986).

Homebanking. In France, homebanking has proved particularly popular (Cerbelaud-Salagnac, 1985). Next to the electronic telephone directory, banking is the service which is most widely known and consulted (Télétel mode d'emploi, 1986). Most banks levy a small monthly charge for their banking services.

At first glance, the willingness of French consumers to subscribe to these services (plus pay the associated telephone charges) is surprising in light of the fact that only a few banks allow customers to pay bills via videotex. Rather, the most common uses of videotex banking services are consulting one's account and transferring funds among a person's accounts (Agnola, 1985). These two functions are particularly valuable in France because of the sharp distinction between checking accounts (which do not earn interest) and savings accounts. Using videotex, a person can earn interest until the last minute before shifting funds out of a savings account in order to pay a bill.

In addition, services related to the stock market have proven popular with French consumers. These services include updated reports; expert advice, analysis, and predictions; as well as simulations in which users can create a fictitious portfolio and monitor its progress. The provision of these stock market services is by no

means confined to financial institutions. Newspapers have found this to be a lucrative area as well (Jauvert, 1987; 30 Minitel services, 1987).

Homeshopping. Shopping via videotex has not enjoyed the same level of success in France as has homebanking. From the first experimental trials of the Télétel system, France's large mail order companies (e.g., La Redoute and Trois Suisses) have attempted to hone their skills at selling through the videotex medium. Having seen telephone orders increase from 10% to 55% of their total between 1975 and 1985, these companies anticipated that videotex would also be warmly welcomed by consumers. Homeshopping has not caught on in France, probably because telephone ordering provides many of the same advantages as ordering via a Minitel terminal. Sales using videotex represent only about one percent of the total turnover for mail order companies (Nahon & Pointeau, 1987; Roche, 1985).

Similarly, the services which allow videotex users to order their groceries and have them delivered to their home have generated more publicity than customers. Caditel, for example, offers consumers in the Parisian area the opportunity to choose from over 1,500 products sold at supermarket prices. Caditel's promotional materials emphasize the service's time-saving benefits and downplay the service's \$100 per year subscription fee (which can usually be obtained at a 25–40% discount). During its first six months of operation, Caditel only managed to attract 500 subscribers. Nevertheless, Caditel's representatives claim that only 2,000 subscribers are necessary for the service to reach its break-even point (Caditel: Le pari, 1985).

Summary. As in the case of information retrieval services, Télétel's information transmission services generally have not lived up to expectations. The growth of homebanking and homeshopping services has no doubt been retarded by the absence of a highly secure payment mechanism. In the relatively few cases in which banks allow payments to third parties, videotex clients must predesignate any party to whom funds will be transferred. Regarding homeshopping, customers need a password to place an order, after which a bill is typically sent through the mail. Thus, service providers who still believe in videotex services which primarily involve information

transmission by the consumer are waiting for the mass distribution of the "smart card," a credit card with a computer chip capable of conducting financial transactions via properly equipped videotex terminals (Collier, 1985; Deniau, 1985; Piper, 1986).

Information Exchange/Interpersonal Communication

If there is one type of service that characterizes consumer use of the Télétel system today (leaving aside the electronic telephone directory) it is the messaging centers ("messengeries") which permit real-time "conversations" between two or more, usually anonymous, people. On the kiosk "hit parade" of most frequently consulted services, every service provider in the top ten has a messaging service as either its first or second most popular offering (Le hit-parade, 1987). (Recall that homebanking services, though quite popular, are accessed via the Télétel 2 network.)

What do people "talk" about when using the messengeries? Some of the services attempt to encourage dialogs and group discussions of "serious" subjects such as politics, literature, and sports. Others provide personal assistance such as tutoring and psychological counselling. Nevertheless, the most common topics of conversation are sex and dating. Indeed, many people use the messaging services as the electronic equivalent of singles bars (Peterson, 1986) and report considerable success (Mia, 1986).

The messengeries are just as popular among service providers as they are among consumers. One reason is that the typical call to a dialog or forum service lasts ten minutes, with many lasting hours. A second reason why service providers like messengeries is that they are relatively inexpensive to operate and hence highly profitable. In the November-December period of 1986, kiosk service providers received almost \$30 million in revenues, an unknown but substantial portion of which was generated by messengeries (Revenues, traffic, services, 1987). It is therefore no wonder that the competition in the messaging business is intense, with some companies even resorting to sabotage (Les méfaits de la concurrence, 1985/86). For example, an employee of one service raids another by posing as a normal user and recommending that other users switch to the competing service.

Summary. Messaging services have proven popular in the United States (Elmer-DeWitt, 1986) but not nearly to the extent that they

have in France. While some French videotex observers view the messageries as heralding a new generation of creative and liberated communication, other observers are hesitant to hitch videotex's future to the messageries. For one thing, a national sex network wasn't what the system's developers had in mind. Once tolerated as part of the system's growing pains, the messageries are beginning to raise some difficult public policy questions (see below).

PATTERNS OF CONSUMER VIDEOTEX USE

In addition to the immense popularity (at least in terms of hours of connect time) of the messaging services, two other aspects of consumer consultation have been somewhat unexpected: (a) the division of consumers into relatively discrete market segments, and (b) higher than expected acceptance by females.

Specialization of Consumer Use

In the planning stages of the Télétel system, no one probably gave a great deal of thought to the question of how homogenous or differentiated consumer use of videotex services would be. Of course there would be differences in the *extent* of videotex use by members of the general public, but would there be major differences in the *kinds* of uses made of this new medium? There were certainly no a priori grounds for believing that consumers would tend to cluster into relatively distinct and narrow market segments.

In 1985, the French telecommunications authority conducted the first phase of what was planned to be a panel study of a national sample of 1,400 Minitel holders. Based on their reported use of fifteen types of services, individuals were classified into nine groups. Table I shows the relative size of each category as well as the percentage of all non-directory calls accounted for by that category.

The typology confirmed a basic distinction that had emerged during the videotex trials in 1982 between "utilitarian" (e.g., home-banking and homeshopping) and "relational" (e.g., communicating with other people and playing videotex games) users (Centre d'Essais Télétel, 1983). The typology also revealed differences within utilitarian and relational users. In particular, the vast majority of utilitarians tended to use only one type of practical service, that is, *either*

TABLE I
Classification of French Videotex Users Based on Types and Frequency of Services Consulted

Type	% of all respondents	% of all non-directory calls
1. Primarily uses electronic directory	55.4	10
2. Primarily uses banking services	8.8	21
3. Primarily uses teleshopping services	5.9	4
4. Primarily uses tourism and travel services	6.2	7
5. Uses a variety of "practical" services (e.g., banking, teleshopping, travel)	3.3	9
6. Uses kiosk services exclusively (e.g., dialogs, forums, games)	7.7	25
7. Uses all types of services regularly	2.9	15
8. Uses all types of services intermittently	5.5	7
9. Rarely uses any services, including directory	4.4	2
	100%	100%

Source: *Etude de Suivi de Télétel et de l'Annuaire Electronique*, report of the Direction Générale des Télécommunications, October, 1985, pp. 102, 105.

banking (8.8% of the total sample) or shopping (5.9%) or tourism/travel (6.2%). Only 3.3% of the total sample could be classified as using a variety of these practical services.

Some of the demographic characteristics of the nine users groups are shown in Table II. Notice that the demographic profiles of the three use-specific subgroups of utilitarians differed from each other and from that of the subgroup of more "versatile" users of practical services. Homebanking users had a higher percentage of males than the sample as a whole, were older, and were more likely to be employed in professional, administrative, or self-employed occupations. Home shoppers included a higher percentage of females than the overall sample, were younger, and were more likely to be middle managers and blue collar workers than other members of the sample. Users of the travel and tourism services were composed of a slightly higher percentage of males and people in the older age category (41 years old and older) than the total sample but were decidedly more likely to be members of professional, administrative, and self-employed occupations. Finally, people who used the full array of practical services tended to be older and more often occupationally

TABLE II
Sociodemographic Characteristics of Seven Types of French Videotex Users

	Total Sample	Type of services used								
		Directory Only 1	Home Banking 2	Home Shopping 3	Tourism/Travel 4	Multiple Pragmatic Services 5	Kiosk Services Only 6	All Services Regularly 7	All Services Intermittently 8	Virtually No Services 9
(% of Total)	(100)	(55)	(9)	(6)	(6)	(3)	(8)	(3)	(6)	(4)
<i>Sex</i>										
Male	49	46	55	38	53	51	62	49	48	61
Female	51	54	45	62	47	49	38	51	52	39
<i>Age</i>										
30 and younger	32	30	24	38	30	17	44	57	38	42
31—40 years old	33	33	38	29	31	30	37	36	36	24
41 and older	35	37	38	33	39	53	19	7	26	34
<i>Employment of Household Head</i>										
Professional and Administrative Occupations, Self-Employed	30	27	34	18	51	22	34	29	29	37
Middle Managers	23	22	13	30	19	31	25	38	42	12
Low-Level White Collar	24	25	22	27	20	21	18	18	22	31
Blue-Collar Workers	7	7	10	14	1	—	6	10	2	8
Inactives	14	16	20	7	7	26	15	1	5	10
Others	3	3	1	4	2	—	2	4	—	2

Source: *Etude de Suivi de Télétel et de l'Annuaire Electronique*, report of the Direction Générale des Télécommunications, October, 1985, pp. 105—106.

“inactive” (i.e., unemployed, retired, or homemakers) than the sample as a whole.

The key point is that, for those people who move beyond the free consultation of the electronic directory, use often remains confined to a single type of service (be it practical or relational). It appears that use of one type of service does not necessarily encourage

“graduation” to other types. In fact, only 8.4% of the total sample used a wide variety of services on either a regular or intermittent basis.

Lack of Gender Differences in Reported Use

The first wave of the panel study conducted by the French telecommunications authority contained some results regarding the sex of users that are at odds with other studies of videotex users (Iwaasa, 1985; Talarzyk, 1987; Widing & Talarzyk, 1983). Respondents were asked to indicate whether various household members ever use their Minitel. The percentage of female heads of household described as ever using Télétel services was almost as high as the percentage for male heads of households (67 vs. 71). When asked to name the principal videotex user in the home, female heads of households were named in 46% of the cases, male heads of households in 45%, children in 8%, and other family members in 1% of the cases.

The “sexual equality” of videotex use reported in the first wave of the panel study does not necessarily indicate that the *intensity* of use (e.g., hours connected) is equal for the two sexes. However, the findings do provide encouragement for those who believe that videotex can become a mass medium.

CONSUMER PROBLEMS: POTENTIAL AND ACTUAL

As noted at the outset of this article, both governments and consumer organizations have closely scrutinized the development of videotex with an eye toward early detection of public policy issues. Most of the issues that have thereby been identified deal with either the broad social impact of videotex or the problems associated with videotex as a channel of distribution for goods and services. With the mass diffusion of videotex in France, a third set of issues has emerged — those dealing with the consumption of videotex services per se.

Videotex as an Agent of Social Change

Even before the first videotex terminal was plugged in, it was possible to imagine a scenario under which the social impact of

videotex would be largely negative. One dire prediction was that videotex would increase social inequality by adding information to the list of resources that separate society's (and the world's) "have's" and "have not's" (for a review of this debate see Compaine, 1986). Second, videotex had the potential to further weaken the position of consumers vis-a-vis businesses. Indeed, videotex would serve up consumers on a silver platter by virtue of its ability to precisely target market segments (Mosco, 1982). For example, videotex service providers would keep track of everything that an individual purchased and then tailor videotex advertising accordingly. A third way in which videotex might negatively effect society would be by favoring large firms and thereby reducing competition (Grønmo, 1987; Mosco, 1982). Finally, videotex could prove to be an instrument of cultural imperialism if services produced in a few advanced nations drove out locally-produced services (Mitchell & Murley, 1985).

In terms of its potential for social harm, videotex was only one of several villainous information technologies. Others included teletext, cable television, and personal computers. Indeed, videotex became the battleground for unresolved issues regarding these other media. For example, the issue of public access to cable television programming was directly transplanted to videotex (Jones, 1983).

Videotex as a Channel of Distribution

It was relatively easy to foresee the ways in which consumers might be abused when purchasing goods and services by means of videotex (Lawson, 1985; Mitchell, 1986; Pridgen, 1983; Shapiro, 1986). For example, would "infomercials" allow sellers to present commercials in the guise of impartial information? If consumers and sellers disagreed about the terms of a transaction, would there be a "hard copy" of the transaction, and for how long would this record be retained? How would an individual's financial records be kept private and secure from unauthorized access? Who should be responsible in the case of purchases made by unauthorized individuals?

Fortunately for consumers, few of the potential abuses related to the home as an electronic marketplace have materialized to a noticeable extent. One reason is that homeshopping and home-banking have been largely confined to large firms with a long-term stake in the marketplace. These firms are not going to jeopardize

their good names for a few extra dollars earned in their videotex operations. A second reason is that videotex users tend to be high in education and income relative to other consumers, making them more informed to begin with and more likely to complain in the event of an unsavory business practice. A final reason is simply that the number of consumer transactions conducted via videotex — in France and elsewhere — is still quite small, thereby making it unlikely that isolated abuses will generate public attention.

Videotex as an Object of Consumption

Where the French case is most instructive is in pointing out consumer problems associated with the consumption of videotex services in their own right. When a person purchases a blouse or obtains a weather forecast via the medium of videotex, a double transaction is taking place. In addition to purchasing a good or service, the consumer purchases videotex services. This second purchase is clearly attested to by the fact that there are videotex charges directly levied on the consumer. The fact that videotex services are consumer goods is even more evident in the case of a videotex services that are consulted for their own sake, such as dialogs, games, tutors, and psychiatrists.

Problems stemming from the consumption of videotex services have been voiced by a number of private consumer organizations in France. As one might expect, the two French product testing organizations (INC and UFC) have pointed out Télétel's deficiencies from a consumer point of view (Minitel maxiprix, 1985; Minitel: Comment mini-dépenser, 1985). More surprising has been the emergence of two consumer organizations specializing exclusively in issues relating to videotex, the Minitel Club of France (Borniche, 1986) and the Association of Télétel Subscribers. A final source of consumer-oriented criticism of the Télétel system has been several videotex magazines, most notably *Minitel Magazine* and *La Revue du Minitel* (Ancelin, 1986).

The dozens of specific criticisms that have been leveled at the French videotex system can be grouped into five general categories: (1) prices and charges, (2) information and disclosure, (3) service and terminal quality, (4) redress, and (5) access for special consumer populations.

Prices and charges. The electronic telephone directory was the object of a major controversy in which consumer groups prevailed. The French telephone authority originally planned to limit free use of the directory to two minutes and to the caller's local area. Advocates for consumers managed to get the time limit for free use raised to three minutes as well as allow free consultation regardless of geographical scope.

An additional consumer victory concerned the question of when charges would begin accruing. Initially, consumers were charged from the moment they became connected to the Télétel system, regardless of whether and when they were eventually connected to a service provider. This is akin to paying for phone calls that result in a busy signal, and the consumer advocates eventually were heeded by the telephone authority.

Several additional issues pertaining to pricing and charges remain unresolved. For example, consumer groups strongly support the idea of a multi-level kiosk system, but they also wish to see time-of-day pricing in the kiosk system as well as a kiosk system for services provided on the local telephone network (as opposed to the national Transpac network). Additional consumer demands include: (a) a detailed and free index of videotex services, (b) the elimination of fees for homebanking, and (c) refunds in the event that a call is disconnected.

Information and disclosure. Consumer groups have also called for a number of policies designed to more fully inform videotex users. For example, they advocate the continuous display on the Minitel screen of the cost of consulting a service. Consumer groups also object to the lack of itemization of videotex bills. Whereas current practice is to lump together videotex charges with other telephone charges, consumer groups would prefer itemization of each videotex consultation. A final information issue concerns the identification of videotex services providers. Given the existence of "sponsors," it is particularly important that consumers be able to separate advertisements from more objective information.

Service and terminal quality. In the area of quality, two consumer complaints are particularly common. One is that it takes too long to get to the useful portion of a service. This slowness is partly attribut-

able to the tree structure used in most videotex programs by which users must answer several general questions before getting to the specific portions of the service that they want. Nevertheless, the slowness also results from the printing of unnecessary welcome screens and from inadequate computer power on the part of the service provider. Since consumers are paying by the second, they have the right to expect reasonably rapid service provision.

In addition to the quality of services, consumer groups have criticized the capabilities of the basic Minitel terminal. For example, the Minitel does not alert the videotex user when an in-coming telephone call is being attempted. Furthermore, the basic terminal does not allow the consumer to compose more than a few lines of text. Consumers do not wish to rent or purchase additional equipment in order to obtain these features.

Redress. Consumer organizations object to the lack of formal mechanisms for solving consumer problems, either proactively or reactively. The Minitel Club of France advocates the establishment of a videotex advisory council with consumer representation as well as a separate telephone number for handling videotex-related problems. (At present, videotex problems must be directed to the same number used for reporting disconnected telephone calls.)

Access for consumers with special needs. Videotex, by virtue of its reliance on text, has the potential to greatly expand communication for consumers who are deaf and/or dumb. Consequently, consumer organizations have successfully pressured for Minitel users to be able to call each other directly without the costly intervention of a service provider. For 10 francs per month, users can rent special terminals which allow them to directly communicate with another properly equipped terminal by simply dialing a telephone number. Telephone rates apply to local calls, meaning a maximum of about 7 francs/hour. Long-distance calls between Minitel terminals cost about 59 francs during peak periods, which makes them less expensive than regular phone calls of the same duration (Un "téléphone" moins cher, 1987).

All in all, a number of organizations have accepted the challenge of agitating for consumer-oriented improvements in the Télétel system. Success has been easiest to achieve in those instances where the interests of consumers and service providers have coincided (e.g.,

expanded access to the electronic telephone directory). In contrast, service providers are unlikely to lend their political clout to proposals for continuous display of videotex charges, itemized billing, or free homebanking.

LESSONS OF THE FRENCH VIDEOTEX EXPERIENCE

In light of the general public's lukewarm response to videotex services in countries other than France, it is tempting to view the warm reception in France as either short-term in nature or irreproducible in other contexts. For example, one might reasonably predict that the growth curve in the number of Minitels in circulation will decelerate since those consumers with the greatest potential interest in videotex services have already been given the first opportunity to acquire their government-provided terminals. (Customers with the largest telephone bill were contacted first about picking up their Minitel terminals.) Similarly, it could be argued that massive subsidization by an all-powerful telecommunications authority, with a long-range and broad notion of return on investment, is unlikely in today's increasingly deregulated telecommunications environment.

Nevertheless, it may be too early to bury videotex — certainly in France and perhaps elsewhere. First, the trend toward deregulation — in telecommunications and in other industries — may in fact present opportunities for videotex. In the United States, for example, the seven regional Bell holding companies have recently won the right to transmit videotex services, although they are still barred from providing the service which they regard as potentially the most profitable — computerized Yellow Pages with its attendant advertising (Roberts, 1987). While telephone companies in the United States may never distribute free terminals to any subscriber who wants one, more carefully targeted distribution may become an important element of competitive strategy.

Perhaps more important, deregulation of industries other than telecommunications may heighten the value of videotex as a transaction medium. Deregulation has the general effect of driving prices toward (upward or downward) the cost of providing service. Moreover, services become “debundled,” allowing consumers to decide precisely which components they wish to purchase. This process is already evident in the deregulated banking environment of the

United States, with the cost of many routine financial transactions having risen. In this context, homebanking via videotex may constitute a low-cost alternative for some consumers. Similarly, in the increasingly competitive airline industry, airlines will seek ways to reduce costs, including the commissions they indirectly pay to travel agents. One option is to offer special discounts for those customers who make their reservations and pay for their tickets via videotex. Thus, deregulation may ultimately improve the commercial prospects of videotex.

A second basis for optimism — and perhaps the most important lesson to be drawn from the French experience — is the way in which consumers will appropriate a new medium and remold it according to their needs. The most obvious example of this phenomenon is the resounding and unexpected popularity of the messaging services in France and, to a lesser extent, the United States (Elmer-DeWitt, 1985, 1986). The messengeries have given birth to their own abbreviated language (similar to that used in newspaper personals) as well as informal protocols for shifting interactions to the less expensive but less anonymous medium of the telephone. A further example of consumer appropriation of the videotex medium is the interest in obliterating the distinction between service providers and consumers. This has taken the form of personal computer owners offering their own small-scale, low-cost videotex services using the local telephone network.

Finally, videotex has largely been regarded as a game in which only “big players” such as newspapers, banks, and retailers have the skill and resources to play. The French aren’t exactly famous for their freewheeling, entrepreneurial spirit, yet a number of small fortunes have been made by videotex entrepreneurs capable of exploiting market niches ignored by larger entities (Charon & Cherki, 1985; Leventer & de Cazanove, 1985). These success stories, in turn, have encouraged a rapidly growing and dynamic sector of small, innovative service providers — a contrast to the United States in which substantial financial barriers to entering the videotex market have existed. Hence, the tremendous variety of videotex services being offered to the French public heightens the probability that useful applications will be found that are unique to the videotex medium (e.g., anonymous tutoring services, remote auctions, last-minute sales of perishable goods). Videotex may still

succeed outside of France if parallel methods can be found for unlocking entrepreneurial energies.

In all, the French experience shows that, under the right conditions, videotex can be a dynamic medium. It is certainly too early to write it off, financially or otherwise.

NOTE

¹ Virtually all of the available data concerning the Télétel system has been collected by entities that are tied either directly or indirectly to the French telecommunications authority. (A small amount of data has been collected by organizations outside of the telecommunications authority, but samples are typically small, regional, or non-representative in nature.) However, there is a spectrum of relative objectivity among the entities associated with the telecommunications authority. At one end of the spectrum is Intelmatique, the international marketing arm of the telecommunications authority. If a conflict of interest exists between scientific objectivity and the need to promote the French videotex system, it would be strongest in Intelmatique's pronouncements.

Next on the spectrum would be the Department of Commercial and Telematic Affairs, the unit charged with promoting the system within France. The Department has an obvious interest in the success of videotex in France. Nevertheless, its panel study of consumers, potentially the most important data set on public response to the videotex system, is conducted at arms length by a private survey research firm.

The Department of Programs and Financial Affairs within the telecommunications authority occupies a position a bit further removed from conflicts of interest. Among its activities are the evaluation of the videotex system in terms of return on investment. Still, one is struck by the fact that under various sets of assumptions, the Department consistently forecasts a positive rate of return on the French government's investment (Cozanet & de la Brunetière, 1986).

Finally, the unit of the French telecommunications authority with the least economic stake in the videotex system's success, and perhaps the greatest degree of objectivity, is the Section of Future Planning and Economic Studies (SPES). SPES contains a number of social scientists with a strong allegiance to a basic discipline. Moreover, SPES obtains a significant portion of its information from studies contracted out to academic researchers. Accordingly, the research released by SPES may represent a reasonable combination of objectivity, data quality, and public access (Marchand, 1987).

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ZUSAMMENFASSUNG

Die Entwicklung des französischen Videotextsystems und seine Bedeutung für die Verbraucher. Die französische Behörde für Telekommunikation macht im internationalen Vergleich die stärksten Anstrengungen, Videotext zu einem Massenmedium zu machen. Sowohl die Tatsache, daß die Terminals (Minitels) kostenlos zur Verfügung gestellt werden, wie auch die besondere Form der übrigen Preispolitik haben zu einem großen Interesse an dem französischen Télétext-System geführt.

Der Beitrag beschreibt (a) die Gründe, aus denen dieses millionenschwere Unterfangen begonnen wurde, analysiert (b) die Elemente des französischen Videotextsystems, behandelt (c) verschiedene Indikatoren zur Erfassung der bisherigen Entwicklung des Systems, nennt (d) die wichtigsten Arten der Angebote, die das System macht, skizziert (e) die Nutzergewohnheiten der Konsumenten, diskutiert (f) Verbraucherprobleme und politische Aspekte, die mit dem neuen Medium verknüpft sind, und prüft schließlich (g), welche Zukunftsaussichten des französischen Videotextsystems auch für andere Länder gelten dürften.

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