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**The Information  
Superhighway  
and Private Households**

**Case Studies of Business Impacts**

With 110 Figures

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# **New Visions of Information Technology and Postmodernism: Implications for Advertising and Marketing Communications**

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## **1 Introduction**

Although volumes have been written on information revolution and much writing continues at this very moment, it is rather surprising that this has not made an impact on the academic field of marketing communications or advertising (Katz 1991). Even within the broader field of marketing, the writing is limited - for exceptions, see Blattberg/Glazer/Little (1994), and current authors' contributions from 1984 through 1994. In the world of marketing practice, there is no question that the information revolution has had an impact on various marketing activities such as, channels of distribution, networking of global markets, product design and new product development, customer data management, home shopping, home banking, real time manufacturing and marketing, to name a few. Although the world of marketing practice is being revolutionized because of new information technologies, the field of advertising seems to lag behind. In a recent speech to the Advertising Foundation, Edwin Artzt, the Chairman of Procter and Gamble lamented profoundly about the state of the advertising field, pointing to the fact that it has yet to show any initiative in capitalizing on new technologies. Here is a quote from his speech:

"...[T]he industry [advertising] is too slow to react to rapid technological changes in the way information is delivered to the consumers...From where we stand today, we can't be sure that ad supported TV programming will have a future in the world being created - a world view of video-on-demand, pay per view and subscription TV...These are designed to carry no advertising at all, and as a result, mass marketers like P&G will have a hard time achieving the reach and frequency we need to support our brands...The absolute key is to create ad-driven programming that suits the many new forms of media that are evolving...Interactive technology can be used to engage consumers in commercials...If a consumer wants to know which Cover Girl nail polish matches the lipstick she saw in our commercial, we can tell her on the spot...Targeting of not just demographic segments but individual households...[A]gencies and clients should use interactive advertising to engage consumers in commercials and provide direct consumer response...If a family has a new born baby, we can make sure that they get a pampers commercial....Ad agencies must embrace today's new media opportunities just as the industry so

swiftly adapted to changes brought by the coming of radio and then TV." (Ed Artzt, Chairman of Procter and Gamble - Quoted in Yahn (1994)).

A similar observation has also been made by Blattberg/Glazer/Little (1994, p. 27) in their recent book, *The Marketing Information Revolution*, "perhaps the greatest casualty of information revolution will be advertising".

Although the field of advertising or, in general, the academic scholarship in marketing communications has not addressed the nature and impact of information technology, there is a lot that is happening in the diffusion of information technology across all sectors of the society that has relevance to the field of marketing communications and advertising. In this paper, we critically evaluate the rapid transformation of our society into information culture, or cyberculture as some authors prefer to call it (Escobar 1994), and the implications of this transformation to the field of advertising and communications. To capture the full impact of the information revolution, we use a postmodern framework.

The study is based on our own investigation of the impact of information technology on American consumers and households, which has been in progress for nearly a decade, as well as our writings on postmodernism. Our work, both empirical and theoretical on these two subjects, has been reported over the past few years (Dholakia/Dholakia 1989, Dholakia 1994, Dholakia/Dholakia 1994, Dholakia/Mundorf/Dholakia 1995, Venkatesh/Vitalari 1987, Venkatesh 1994, Venkatesh/Vitalari 1990, Venkatesh/Vitalari 1992). Funding for the technology-based studies were provided by the National Science Foundation, and AT&T. The primary focus of these studies is on the diffusion of computer technology into the home and their actual use by the members of the household.

In the last ten years, three major technological innovations have entered the American home and each has represented a different development. The first was the arrival of the VCR (the technology of entertainment), the second, almost simultaneously, was the arrival of the personal computer (the technology of information), and the third is an ensemble comprising the answering machines, fax machines, voice telephones (the technologies of telecommunication). The fourth which is the most recent and at a rather rudimentary stage of development is the interactive technology or the multimedia. All these developments are far advanced in nature compared to the previous technology of the home, the television set, an enduring technology in its own right but ready for change.

In addition to these new technologies of hardware, there have been other developments in the service oriented technologies of information and telecommunication, such as cable TV, database services, and integrated technologies such as World Wide Web, Prodigy, America Online, video services, home shopping and home banking. All these use existing hardware, the telephone, the television, and the computer.

It is true that not all these services are well developed. On the other hand, collectively, they represent a sea-change in the way the new technological environment is emerging.

More concretely, we are reminded that the era of information highway may have just begun (Brody 1993, Davids 1994, Egan 1991, Lee 1993, Ziegler 1994) and we

are now in the world of multimedia (Fetterman/Gupta 1993, Goble 1994), virtual reality (Bjocca 1992, Taubes 1994, Warwick, Gray/Roberts 1993), and interactivity (Davids 1994, MacDonald/Shneiderman 1994). The placid setting of the home to which we escape from the pressures of the outside world may no longer remain the same as these technologies make a concerted effort to change its interior and link it electronically to the exterior (Bjerg/Borreby 1994). Speculative as some of these visionary schemes are, they are being viewed as serious possibilities in the years to come.

The purpose of this paper is to address various issues raised by the developments in information technology and postmodern practices and examine their implications to the field of advertising. The paper will proceed as follows. In Section 1, we discuss the existing communication paradigm in advertising. The next section will examine some empirical findings on home computer use based on our research. This will be followed by a discussion of more current developments in new technologies such as multimedia, virtual reality and interactivity. Following this, we provide a brief but focused analysis of postmodernism and its relationship to the emergence of new technologies. In the final section, we propose a new paradigm for advertising based on our discussions in the previous sections.

## 2 Existing paradigm for advertising

The field of marketing communications and advertising, in particular, as it is currently understood, operates under a modernist paradigm (see figure 1). Modernism is defined here as a cultural/philosophical position which regards human subjects in cognitive terms as opposed to viewing them in semiotic or symbolic terms (see Donzal/Kernan (1993) for elaboration of these ideas in the context of advertising). Advertising encompasses the domain of mass communication, is involved in information transfer from producer to the consumer, and is a unidirectional system of communication from the sender to the receiver. The technologies of mass communication on which advertising relies are the print media, radio, and TV which are primarily designed to reflect this model of unidirectional communication. The characteristics of the existing paradigm as shown in figure 1 may be described in the following terms:

1. The underlying theoretical model of communication involves four primary elements, the message sender, the message, the message channel, and the message recipient (Belch/Belch 1990, pp. 128-132). This scheme is also more popularly known as "who says what to whom with what effect". This is a unilinear model which in practice translates into what we shall label as the one-to-many model. This model of sender-to-a-passive receiver is extremely fundamental to the way advertising has been conceptualized in both academic scholarship and actual practice. This model has been found useful in the era of mass marketing and mass advertising and has been in force for nearly half a century.

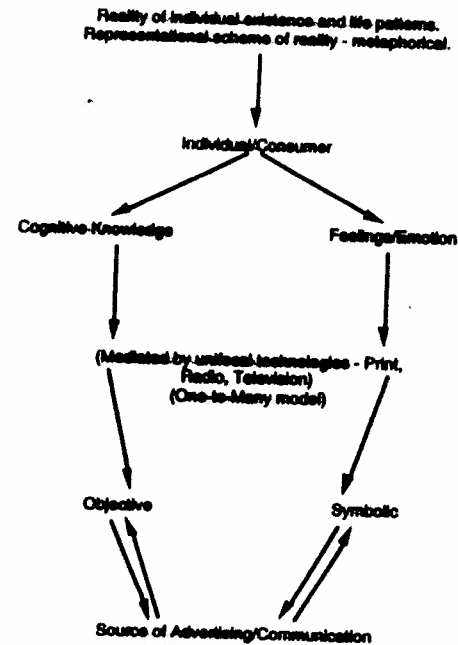


Fig. 1. Old paradigm for advertising/marketing communications

2. In this model, advertising is viewed as an activity of information transfer and system of communication preceding product sale.
3. The dominant media for advertising are print, radio, and television. The history of modern advertising coincides with the development of these three media (photography and color print, film, and wireless transmission of audio and video messages). These media are independent in that they are not connected to each other technologically (as multimedia technologies are). However, they are linked strategically by the marketer who tries to complement each medium with the other for advertising purposes. These three media are designed to reflect the theoretical model mentioned earlier.
4. Advertising operates under the important assumption that mass communication is ephemeral and perishable. Advertising campaigns last a limited number of weeks and a specific advertising message is repeated only a few times. Hence the research technologies of advertising - reach, frequency, response measures - are developed to reflect this particular aspect of advertising.
5. The advertising messages operate on a metaphorical scheme of representation which is also the modernist view of representation. It means that the goal of

advertising is to capture and present the world of reality as it exists or to capture its idealized form, although the contexts and situations surrounding the reality might vary. Advertising models, both marketing strategy models and consumer response models, are designed to correspond to this framework of reality.

Why is this model inadequate? In what sense does it need to be reevaluated? Our position in this paper is that the communication environment in which the established models of advertising have operated for years is radically changing. The primary engine for this change is the emergence of new technologies. In addition to the communication environment, our notions of reality and how the individual subject is constituted are also changing. These changes are captured in a postmodern framework.

Our proposed model of advertising (see figure 2) is indeed based on different assumptions of reality and the nature of communication environment shaped by the emergence of new technologies. We discuss the proposed model in detail in the last section of the paper following a critical and comprehensive examination of the emerging technological picture. In the next section we present some key findings of our research on the impact of computing technologies.

## 2 Empirical work on computers

When we began studying computers for home use in the early eighties (Dholakia/Dholakia 1989, Venkatesh/Vitalari 1987), this was an uncharted territory. As we were entering the field, in the broader field of computers, the transition had just occurred from large scale to mini computers and then on to personal computers (PCs). We started our study with the beginning of the PC era. Against all speculative predictions that a PC revolution was afoot in the home front, we were cautiously optimistic about the changes that were likely to occur, claiming that there was nothing quite approaching a revolution. We conceded that computers and computing technology had the potential to transform many sectors of society including the American home, but this was not going to occur suddenly and the conditions needed for computer take over were not yet available. To avoid speculative forecasts, we decided to study the phenomenon of home computing empirically and systematically and launched multiple long term projects beginning in the mid-1980s and continuing to the present time to study the actual use of the computer in the home. Our studies are one of the very first to investigate computer use in the home and they are certainly the most comprehensive.

During the first period of our projects, roughly coinciding with the later half of the 80s' decade, the talk of home computer revolution began to slowly fade. Instead of computer "revolution", people were talking about computer "bust". Many pessimistic articles began to appear in the press, manufacturers were totally confused, and popular writers stopped talking about computers in the home as a major development. There was much silence.

We found that the pessimism of the late eighties was as unjustified as the heightened hype of the early eighties. We are now in the nineties, things have changed dramatically, optimism has returned with a tinge of realism, aided by a decade of actual experience to back it all up. This is not to say that the speculative cycle has not returned, but this time it has assumed a different character - speculation seems inevitable in the technological game.

Our studies which began in the mid-to-late mid-eighties included longitudinal surveys, cross-sectional surveys, regional and national surveys of American household studies. The primary focus of the study was the use of computers in the home as stand alone units, and more recently, this has expanded into the use of computers in a multimedia context. Our various studies revealed that there was no justification for early hype or later pessimism. Computer revolution may not have occurred in the precise manner predicted, but there certainly was a quiet revolution. The popular press was imprudent in predicting the early revolution as it was in diagnosing the later demise. Our job throughout, as researchers, was to separate fact from fiction and establish the knowledge needed for continued exploration.

The following is a summary of important findings. Before giving the actual findings, some general observations based on our research will be in order.

### 2.1 Some general observations

1. Technological environment moves faster than the capacity of human beings to adapt to them. This asymmetry of technological production and consumption needs careful evaluation. However, once the consumers are familiar with the technologies, and well-versed in their use, the consumers become the prime movers of technological acceleration. In this sense the consumer is both a consumer and producer of technology.
2. It was a mistake to generalize the success of information technology from the commercial/industrial sector to the household sector. Success cannot be easily duplicated if the domains are not equivalent. Companies which manufactured commercial information technologies had no experience in the household consumer market, nor did they understand the dynamics of the household behavior. There was much ignorance in this area and when failure struck, the companies they simply withdrew, closed shop, and did not exhibit any desire to learn. Although they finally realized that technological prowess in one area does not automatically translate into another domain, they were not interested in finding out why.
3. In the eighties, the computer technology lagged very much behind its promised potential, particularly in the area of software development for home use (e.g. multimedia). There were many constraints on what computers could do and the software capabilities were rather limited in terms of what the households would need. Although claims were made that computers could do several things, their technical capabilities were rather primitive. However, because computers were already well established in work environment, the software technology was more developed for job related uses.

4. In order to understand why technologies succeed or fail, we need first a theory of technology, second a theory of household behavior and third, a theory of household-technology interaction. After years of our own empirical work, and a growing body of knowledge resulting from the work of other researchers, we believe such theoretical frameworks are available.
5. To call a PC a home computer does not guarantee its acceptability in the home environment just because the prefix "home" is attached to the word "computer". It is not the label that one gives to the technology that counts. Second, the fact that PC can be used in the home and is in fact used in the home does not guarantee its acceptability.
6. Instead of labeling the 1980s the decade of failed revolution, it is more accurate to describe it as the decade which laid the foundations for the home-information revolution that was due to begin in the 1990s.
7. The time is now ripe to study contemporary developments, to record and critically analyze the events as they are unfolding in the context of home-information technology scene.

### 2.2 Specific findings of our studies

1. A majority in our first set of samples viewed computers as job-oriented technology. It did not matter that computers were used inside the home, but they were still perceived as tools that facilitated job related work. Close to seventy percent of computer use in our sample was for job related purposes. In other words, computers were primarily viewed as technology which facilitated work at home. But they were also viewed as establishing a link between the place of work and home.
2. The above result needs some elaboration. On the positive side, computers can facilitate teleworking or telecommuting. Those people who want to work at home for any number of reasons, part time or full time, may be able to work at home if the nature of their work (i.e. transportability of work) permitted it.
3. A related finding was that computer use for work at home was high among those with telecommunications facility (e.g. multimedia) compared to those who did not have this facility and where the computer operated as a stand alone unit. This additional finding leads to interesting possibilities for the 1990s. Respondents were interested in multimedia capabilities of the computer rather than computer as a stand-alone unit. In the 1980s the telecommunication facilities were rather rudimentary and had not reached a high degree of sophistication until the 1990s.
4. Computers are appealing if they can be linked to other media. This explains why for example, the diffusion and penetration of VCRs which came into the market roughly about the same time as PCs, was faster and deeper. The penetration rate of computers in the mid-eighties was about 10% and has inched to 33% in recent months (Shiver 1994). The VCR penetration rate is now anywhere between 75% to 85% and was already close to 35% to 40% in mid-eighties. More than the computers, VCRs were viewed as part of the family

entertainment scene. VCRs were also used to record family events and were, therefore, treated as family electronic album.

- As mentioned earlier, it is clear that as long as computers were stand alone units, their potential usefulness was limited. This does not mean that there are no stand-alone technologies in the household. In fact, almost all domestic technologies are uni-functional stand alone units (refrigerators, vacuum cleaners, microwave oven or television). But these technologies are well integrated into the household environment. They were originally developed as household technologies and did not derive from industrial applications. They were all designed to assist in the performance of several household tasks such as food preparation, house cleaning, family entertainment and the like. Computers did not fit this scenario. In addition they are very complex machines and require skills that are not commonly accessible to most household members.

### 2.3 New developments

We have already mentioned that the environment of the 1990s is very different from the 1980s. The following are some key developments that differentiate the two decades.

- The whole development in the software is unprecedented. The software developments have reached extremely sophisticated levels which means that we have the technology available that addresses consumer needs.
- The development of multimedia which was not even mentioned as a technological possibility in the 1980s. Multimedia possibilities are the direct result of cross-over technologies.
- There is now a sudden realization that "home" is where new technologies can achieve their full potential. No more is it necessary to assume that technology needs to be transferred from the commercial site to home site. Home itself has become the main site for many technologies. Most technologies are being developed with home as the main target site. Four different industries are now viewing home as their target of attack - the telecommunications industry, the information industry, the computer industry, and the entertainment industry.
- Development of the concept of smart home or intelligent home. The development of prototypes makes this a new reality within the grasp of residential architects, technology developers, and town planners. The 21st century has suddenly become a reality.
- Why has the home become the main target? There is no one single or main reason. There are many forces and some key ones are mentioned here.

#### 2.3.1 From the technology side, what was considered speculative or idle fancy (fantasy?) has suddenly become a real possibility

The convergence of many technologies is rapidly occurring. It is now possible as never before to link computers, communications, telephone, and entertainment

technologies. As a result of cross-over technologies, new possibilities have emerged.

New information technologies have been introduced into the home successfully - e.g. the answering machine and the fax - paving the way for similar introductions. New electronic services are also becoming available, video-on-demand, home shopping, home banking, and home financial management (see excursus below for a full description of the emerging technologies). As a result of cross-over technologies, we find that companies are leaving their traditional business areas seeking unfamiliar territories for exploration. Apple (computers) is now getting into multimedia, AT&T (telecommunications) is getting into entertainment, Philips (entertainment and consumer electronics) is now moving into smart homes, CBS (Broadcasting) is trying to move into home shopping and so on.

#### Excursus: Information Highway, Multimedia, Virtual Reality and Interactivity

Note: This section is based on a review of selective recent literature: Biocca (1992), Brody (1993), Davids (1994), Egan (1991), Fetterman/Gupta (1993), Goble (1994), Grant (1991), Lee (1993), Macdonald/Shneiderman (1994), Schatz/Riordan (1994), Science (1994), Taubes (1994), Warwick/Gray/Roberts (1993), Ziegler (1994).

#### Information Highway

The information highway is a powerful electronic network capable of delivering vast amounts of data and entertainment to businesses, households and other publics which in turn can be inter-connected. An ultimate global connection will link various national markets on a real-time basis. The highway is in the early stages of planning but some existing links will form the foundation for a full-fledged construction that might take anywhere from ten to fifteen years for completion. As part of the information highway, multimedia, interactivity, and virtual environments are the mechanisms for delivering image, text and sound data in which the user interacts with the databases using a combination of the television, the telephone, and the personal computer.

The information highway consists of many facilities and systems; data compression and storage, servers, the conduit (e.g. fiber optics), the user interface (TV or PC), the set top box (multimedia converter), and communication systems for correspondence, voice mail and video images.

Below are some brief descriptions of multimedia, virtual reality, and interactivity. These are not mutually exclusive and highly inter-dependent in terms of their structure and scope.

#### Multimedia

Multimedia refers to electronic data processing technology that can combine several functions: text processing systems to format and prepare text documents; text retrieval systems to find a document from a set of documents; database management systems to store and retrieve a structured data; special systems to handle animations, images, video and sound. Usually, the access to such technological functions involves a computer

with telecommunication facilities (telephone, cable TV). In the absence of a computer, a television set can be used as the main interface for accessing these various functions. From the technology side the construction of multimedia requires an infrastructure that is at its very elementary stages-of development. This is the reason why the information superhighway has been proposed. Multimedia resources are very expensive to produce and require capital expenditures that only a few organizations can make. They also require the expertise of several disciplines. For example, in a smart home project now in progress in Copenhagen, Denmark, over a hundred companies are involved. They require highly specialized tools. Systems that integrate various multimedia functions are still under development, but the technology is moving very fast.

Multimedia technologies can combine the elements of the artificial world with the elements of the real world. The elements of the artificial world are text, graphics, and animation. The elements of the real world are audio, image and other sensual experiences.

Multimedia industry is extremely fragmented. One can see small operations of ten people to 500 people. There is nothing to say that the bigger organizations have an advantage in this industry. Conventional organizational theories do not hold in terms of growth and sustainability. New theories are not available to suggest what patterns work and which ones do not. Therefore, there is a lot of experimentation in both practice and theorizing.

#### Virtual Reality

Virtual reality is a set of computer technologies which, when combined, provide an interface to the computer with which the user can believe he or she is actually in a computer-generated world. This computer-generated world could be model of a real-world object such as a house not yet been built or currently existing, or it might be any abstract world or simulated real world. The computer interface provided by virtual reality is three-dimensional. The world or model to be viewed by the user is apparently real, completely surrounding the user, and responds appropriately to the user's natural motion and interactions. The user is led to believe that the model being viewed is real.

Two key concepts of virtual reality are immersion and interaction. The user must feel immersed in the virtual environment, and must be able to interact with the world using hands, arms, head and legs. Without both immersion and interaction, the user will not readily believe that the world is real, and will not gain the same depth of understanding of the model or data. Virtual reality incorporates much human aspects engineering which maximizes its impact on human senses and perceptions. The technology was born from the merging of many disciplines including psychology, cybernetics, computer graphics, data base design, real-time and distributed systems, electronics, robotics, multimedia, and telepresence.

#### Interactivity

Interactivity refers to the active participatory role of the individual in computer-based virtual and multimedia environments. The traditional electronic media, radio and television are non-interactive media. The first interactivity began with the introduction of VCRs and remote control switches for the TV. But they are interactive in a very

limited sense for they do not change the environments in any significant way. Another early example of interactivity are the video games but games are not real environments although they are very interactive. Telephone is the only true long-standing interactive technology but it is limited to voice-to-voice interface.

Fetterman and Gupta (1993) have identified four types of interactivity based on space-time displacements. The spatial displacement model defines interactivity when it takes place at the same time but across different spatial zones. The best example of this is the telephone. The second model is the temporal displacement model where interactivity takes place at different times but within the same space. This is a shared communication environment. The third type is both temporal and spatial displacement where messages are stored and forwarded through electronic media. All kinds of computer based communications fall into this category. The last type is where there is no displacement of either space or time. The best example of this is the face-to-face communication. This type of communication is also being incorporated into shared electronic space and real-time environments. The digital technology can now accommodate virtual environments as if the participants are communicating face-to-face.

Interactivity in current parlance means the real world participation of the individual by establishing simultaneous or sequential communication with the source of communication in the context of multimedia. The word source of communication is somewhat meaningless because the initiator could be at either end of the communication chain.

According to various industry sources and academic researchers the following areas have been identified as having an impact because of the new technologies and electronic media: Teleworking/telecommuting, Home Entertainment, Education, Tele-shopping/Home shopping (Graet 1991), Telecommunications, Home Computing/Home Management. In no sense are these areas to be considered mutually exclusive or exhaustive. Here is a brief description of how these areas are developing and will continue to develop.

**Teleworking:** This refers to work at home. Our own research (1990, 1992) shows that this a growing activity largely aided by computers at home. In our research, we identified five different types of teleworking, telecommuters who substitute working at home for commuting to work, moonlighters who work on different jobs from their primary employment during weekends or evenings, supplemental workers who work at home in addition to full time work, self-employed people who use the home as their business, and part-timers who work at home for outside organizations on contract work.

**Home Entertainment:** Includes two principle services, movies-on-demand and video games. Many industry experts believe that this will be the most commercially successful market among interactive services. The reason for this is that home entertainment via TV and VCR is already well established and also because of the low level effort involved by the user.

**Teleshopping:** Teleshopping promises consumers the ability to purchase goods and services through the TV set. This is still in a development stage although some companies are quite successful in the home shopping business, Home Shopping Network and QVC. There also have been some failures, as evidenced by the closing down



of J.C. Penney's interactive shopping system and Sears Roebuck's joint venture with IBM on Prodigy Services Corporation.

**Telecommunications:** This is a rapidly growing area especially with possible integration of the telephone, personal computer, and television. Some already existing facilities include, computerized fax systems, electronic mail, and telemedicine.

**Computing in the Home:** This was a promised land in the eighties and while the growth has been slow, it seems to be coming on its own. Currently, computer services, such as, Prodigy, America On-line, and CompuServe are pushing their services aggressively.

**Internet:** This refers to electronic networking of individuals with other individuals and organizations on a one-to-one basis or simultaneously.

**Home Management and Intelligent Home Systems:** The user is granted convenience and control over appliances and electrical equipment in the home through interactive systems, thus minimizing manual operations. There are three functional categories in the home system: interactive smart products, intelligent subsystems, and central home automation systems. This is at a very experimental stage and requires the integration of computers, fiber optics, multimedia capabilities, where data, voice, and visual communications come together.

### 2.3.2 Globally speaking...

The idea that the world is becoming a global village, (an idea 10-15 years ago was an idle chat) has now become less fanciful. It is now possible for any two sites in the world, however remote they might be and however undeveloped they might be in terms of their industrial profile, to establish contact with each other, and to transmit symbols and images across the globe. Many communities which have remained isolated and technologically primitive are suddenly brought into the electronic age without having to tread the conventional technological paths.

Many information technology oriented companies or information technology dependent companies are able to move freely across the globe and set up their production facilities wherever they wish. Information technologies require information oriented labor. Information labor was historically expensive because it required high degree of technical skills and specialized university training. In the past, that is, in the 80s, in advanced industrial countries, such labor was most expensive and although companies may have had the technical feasibility it was not easy to employ such labor. Or, they had to import labor and that was also expensive because they had to comply with local industrial wage standards.

Now things have changed. First, a majority of technical skills are now available in low wage countries - e.g. China, India, Mexico, and Eastern Europe. Second, there is no need to import labor from these countries. The companies can themselves move their operations and easily establish them in many of the developing countries. With the collapse of communism and the cold war, countries which were not accessible to American/Western companies are now available with their technical talent. With old political ideologies disappearing and with them, all kinds of barriers, the so called closed societies are opening up for new international cooperation and business ventures.

Companies like Motorola and Texas Instruments which are pioneers in information technologies are setting up facilities in these new markets. Companies which are not producers of information technologies but major users are also taking similar steps. For example, Swissair and Singapore airlines are moving some facilities to developing countries for similar reasons.

### 2.3.3 New commercial possibilities

In order for technologies to develop, there must be a potential for commercial success. Many companies and large transnational corporations are now entering the information technology business or information business. With new realities, the meanings of the terms, information technology and information are changing dramatically. First the character of their business is changing because of the developments in the information technologies. It is becoming an imperative as well as attractive for many companies to link their future with the development in information technologies. First, the commercial opportunities are opening up in ways hitherto unforeseen. Second, the costs of technology are dropping dramatically and this is making it attractive for companies to enter the business.

### 2.3.4 People's use of information/communication technologies as everyday experiences...

The general public is now exposed to greater computerization than ever before. Whether it is the work environments, schools, airports, shopping malls, supermarkets, banks, all kinds of everyday activities are now performed using computer based technologies. The convergence of information and telecommunication technologies is now taking place without much fanfare, with much more of it to come. The 1990s are appearing more and more like the information society discussed in the speculative literature of the past. The information revolution has arrived unnoticed but bringing fundamental transformation in our society.

We are also seeing a whole generation of young children growing up with computers. There are many two year olds and three year olds using computers as if the computers are part of their world of toys and play accessories.

### 2.3.5 The government has joined the fray...

The US government has also stepped in to develop a new industrial policy around information technology. The "information highway" which was recently declared by no less a person than Al Gore (US Vice-President) as the next technological frontier is the first sign that there is a collective pressure to generate and nurture a new public culture of information. This may sound a bit like the "space exploration to the moon" project of the 1960s, but it also demonstrates how communities or societies make conscious decisions regarding their goals and objectives and how they marshal their collective resources towards achieving them.

Driven by global competition and other economic pressures, both domestic and from abroad, coupled with the realization that technological resources and talent are available at unprecedented levels, the decline of cold war and the freeing of

resources, the concerted move toward creating an information society is to be viewed as the most serious effort to date in this direction.

As a historical comparison, we can liken this new scenario to the development of the automobile industry and the telephone industry, both of which have revolutionized American life styles and culture. In sum, in the ten years since we started our early studies much has happened and much is happening. We are strategically situated to investigate these changes as reflected in the new technological culture.

### 3 Postmodernism

Although this is not a place for a long discussion on postmodernism, some key ideas will be presented here with implications to marketing communications and advertising. Readers are referred to recent articles (Domzal/Kernan 1993, Firsiroti/Venkatesh 1993, Firsiroti/Dholakia/Venkatesh 1995, Sherry 1991) for elaborate treatment of postmodern concepts.

In many ways marketing represents the essence of the ongoing transition to postmodernity. As we discussed in our earlier work (Firsiroti/Venkatesh 1993, Firsiroti/Dholakia/Venkatesh 1995), in postmodernity, the boundaries between the market organization-customer, consumer-worker, individual-institution have begun to blur. The period of modernist dichotomies is coming to an end as we begin to enter the postmodern era. The long established dichotomies that separated the production processes from the consumption processes, work from leisure, economy from culture, male from female (as a socially gendered category although not a biological category), functional from the symbolic, center from the margins, domestic from the global, real from the artificial, and substance from form, are all dissolving either into new dichotomies or new forms of postmodern realities. The earlier social order and our cultural experiences were predicated upon these dichotomies. We are now witnessing some fundamental changes in our society. For example, the male-female distinction is changing with the changing roles. This has also altered the shape of our work force and our notions of work culture. With the new technologies of information and telecommunication our work and leisure processes are also changing. With the emergence of virtual reality and virtual environments, our concepts of reality are also changing. Postmodernists use the term hyperreal for our new visions of reality. Similarly, the categories of producer and consumer are being altered as more and more consumers are producing and reproducing new symbols of consumption and reconstructing their roles as consumers. The distinction between private and public is also subject to change as our social mores undergo modifications. Finally, the whole movement toward globalization in production and consumption patterns are effacing national boundaries and cultural barriers.

Many of the above changes are being accelerated by the emergence of new technologies of information and telecommunications. Computers are making it possible for people to work at home or from remote locations. Here we see both

spatial and temporal displacements never encountered before. Because of the new technologies, new forms of culture are emerging. MTV is a case in point. The entire MTV revolution has altered our conceptions of entertainment for entertainment has become both hypervisual and televisual. MTV has no parallel in real life and is the best definition of a virtual environment. Recent developments in Las Vegas using extremely powerful cinematic-technological effects to produce new vistas of historical detail have received much attention not only because of their tourist interest but because of their virtual character.

Underlying the relationship between postmodern consciousness and information technology is a profound relationship between ontology (our view of reality) and technology. One feeds on the other incessantly. As technology creates new realities, virtual and interactive, postmodernism provides a framework within which such realities can be grasped and understood. Many of our postmodern sensibilities are concretized through technological possibilities. The fragmented subject which is a constant theme in advertising images is not simply a technological gimmickry but a redefinition of our notions of the individual subject. Similarly, the postmodern notion of hyperreality - which is a paradoxical notion that there are things which are more real than the real - is possible because the technology of multimedia and visual environments have realized it. In a remarkable way, our cultural ethos, the social order and economic behaviors are shaped simultaneously by the products of our postmodern sensibilities and technological possibilities.

### 4 A new paradigm for advertising

In figure 2, the proposed model looks at advertising in postmodern terms. The whole picture of communications changes because of the assumptions we have to make based on new realities.

With the arrival of new technologies of communication and information and the postmodern conceptions of reality, a new paradigm needs to be considered.

1. Instead of considering the individual on two dimensions, cognitive (information processing) and emotional, we introduce two more dimensions, the semiotic or linguistic dimension, and the interactive-experiential dimension.
2. Instead of viewing the communication model based on one-to-many (the producer of the product to a mass of consumers), we consider alternative models such as one-to-one, or many-to-one, or many-to-many.
3. The mediating technologies in the earlier model were print, radio, and television which basically reflected the one-to-many model. With the introduction of multimedia, virtual reality, and interactivity, we should be able to accommodate more participatory models of consumer response.

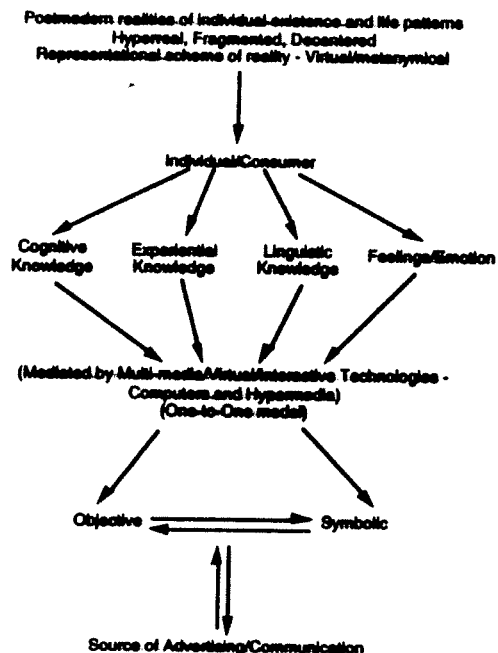


Fig. 2. New (postmodern) paradigm for advertising/marketing communications

4. In the previous model (see figure 1), it is assumed that the source of communication is the producer but in the current model, the source can be the consumer.
5. The previous model also assumes that advertising is a companion function to marketing that in that it stimulates interest in the consumer to purchase the product after being exposed to the ad. There is thus a spatial and temporal displacement of purchase, whereas in the current model no such implicit or explicit assumption exists. The product advertisement can appear at the same time that the purchase is also influenced. The best current example of this model is the infomercial where a number of products are advertised and the consumer is given the opportunity to buy the product at the same time. Thus the advertising function is combined with the sales and distribution function in an interactive mode.
6. Virtual reality environments can also make it possible for consumers to engage in certain product experiences as if they are real-world experiences.
7. The proposed model has a different symbolic scheme. Instead of the representational scheme of the earlier model where advertising attempts to

represent reality but in an idealized fashion, in the proposed model advertising operates metonymically where images and messages are interspersed in a world of virtual reality. Virtual reality is an "as if reality" and unabashedly so. The consumer enacts the virtual environments. The traditional technologies of mass communication are based on metaphorical representational schemes where reality is meant to be represented by the mediating technologies as realistically as possible. But with the changing notions of the real and the artificial, the models of consumer response cannot remain the same.

8. The technological environment is changing fast. Technologies are personalized instead of being massified. They are also democratized as in the case of Internet, fragmented and decentralized in a postmodern sense. In fact the best embryonic model of the new technology is the telephone and not the traditional radio or television, but it never realized its potential, until now. The personal computer has come into the picture as the new personal communication technology par excellence. Coupled with telephony it has assumed a key position in the new technological development. Secondly, the earlier model of advertising was based on the notions of perishable information partly because of the nature of the media. But now, we find that information is more archival, data-base centered, non-perishable, and storable.

The computers are networked which means individual consumers can communicate with many other consumers electronically, via bulletin boards and Internet. In fact computer networks are being replaced by networking in an information space.

## 5 Conclusions

In this paper, we have attempted to show that our ideas of advertising need to undergo radical revision in view of the emerging technologies. Apparently, this feeling is shared by many practitioners who have come to realize that business cannot go on as usual. As academic researchers, we can contribute to this process of change with new ideas and paradigms.

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