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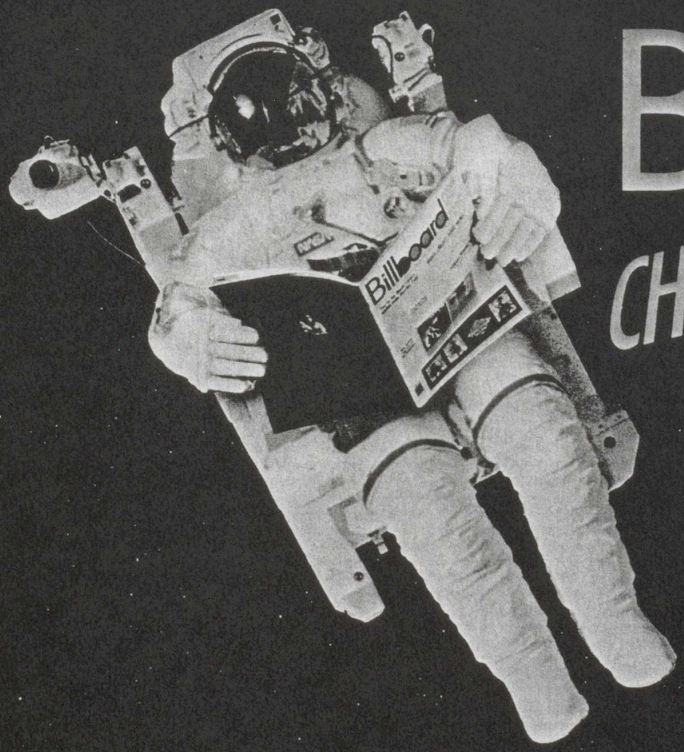

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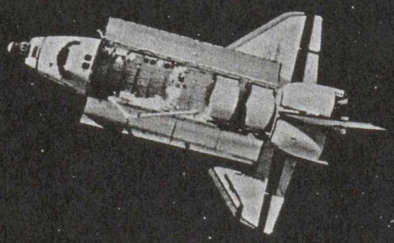

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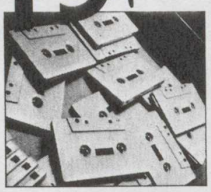
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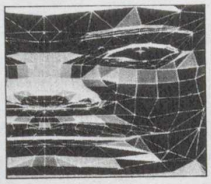
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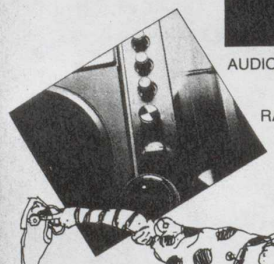
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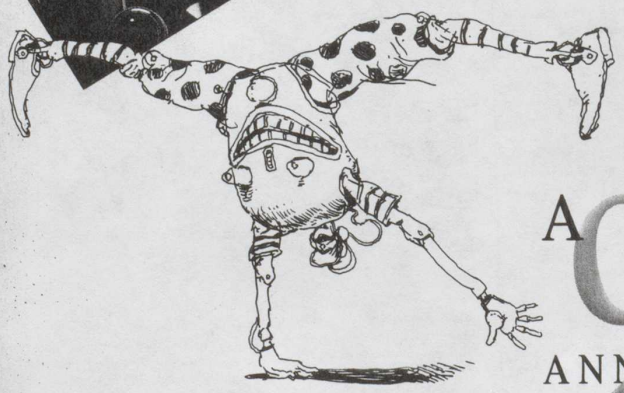

A 90th ANNIVERSARY

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SPECIAL EDITION

"This is a product which may well revolutionize the retailing of home amusement products. It is not stretching too far to say that perhaps [it] may some day rival record sales in gross retail volume."

The quote comes from a Billboard front page of yesteryear, part of a report detailing new technological developments at RCA. The headline was equally bold: "Look at Future: TV Home Tape May be Sold Like Records."

That particular piece of futurecasting was made on the occasion of an anniversary—Oct. 1, 1956, the day that RCA's David Sarnoff "celebrated his Golden Anniversary in radio, television and electronics," according to the company. It's in the same spirit, and we hope with some of the same foresight, that Billboard signifies an anniversary of its own with "a look at the future."

The publication came into existence on Nov. 1, 1894, "devoted to the interests of advertisers, poster printers, billposters, advertising agents, and secretaries of fairs." It's evolved from that 19th century purpose, acquiring (and relinquishing) a few other editorial ambitions along the way, to encompass today's ever-broadening horizons of music and home entertainment.

To celebrate 90 years of continuous publication, therefore, we offer "Billboard Charts The Future"—a series of special reports designed to probe and perhaps even predict the shape, the sight and the sounds of home entertainment in the '90s and beyond.

The core of this special issue has been specifically prepared for Billboard by Data for the Future, a prestigious "think tank" which

The organization, with facilities in New York and Phoenix, is led by Dr. Herb London and Dr. Rob Melnick, nationally known for their work as researchers, writers and speakers in the area of future studies. Among other credentials, both have affiliations with another well-known think tank, the Hudson Institute —and both are former professional musicians. Working under their direction on the Billboard project has been a team of scholars, engineers, writers and communications experts.

Data for the Future's six reports herein disect various aspects of the home entertainment industry's evolution. Prominent among them are audio/video software delivery and programming systems; the relationships of those systems to current and anticipated telecommunications technology; the role of the home computer; the distribution and retailing of consumer products; and international demographic trends, and their economic effects.

Of necessity, many of the articles are concerned with the technology of home entertainment. Who will be tomorrow's movers and shakers in the *creative* community? That information is virtually impossible to capture and to quantify, apart from the certainty of cyclical trends (the periodic emergence of an entertainment superstar, for example, such as Frank Sinatra or Michael Jackson).

Technology fuels creativity, of course. A number of the developments identified and predicted in these pages will yield innovative and exciting entertainment forms, just as the invention of the gramophone record did, and just as the arrival of the videocassette recorder is doing.

For these and other reasons, each article offers information on the surprising. Taken as a whole or in part, we hope the results will be both challenging and useful.

THE ART IN THIS ISSUE: To contrast the historical flavor of this commemorative issue, Billboard has selected a representation of internationally acclaimed computer-generated graphics to accompany the editorial theme—the evolution of home entertainment & music technology. It will be of interest to note, all six reproductions on our editorial pages were digitally simulated by a computer (with the exception of the robot from "Metropolis" on page 47). Working with the world's most powerful computers, today's visual special effects designers are able to simulate photographic reality as easily as a keyboard synthesizer simulates a brass section. "Is it live or computer-generated?" is the question we can all ask ourselves from time to time while watching a movie or a TV commercial. Soon we may have to pinch ourselves to see if we're really dreaming.

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Dedicated to W.D. Littleford, Chairman & President, Billboard Publications Inc.

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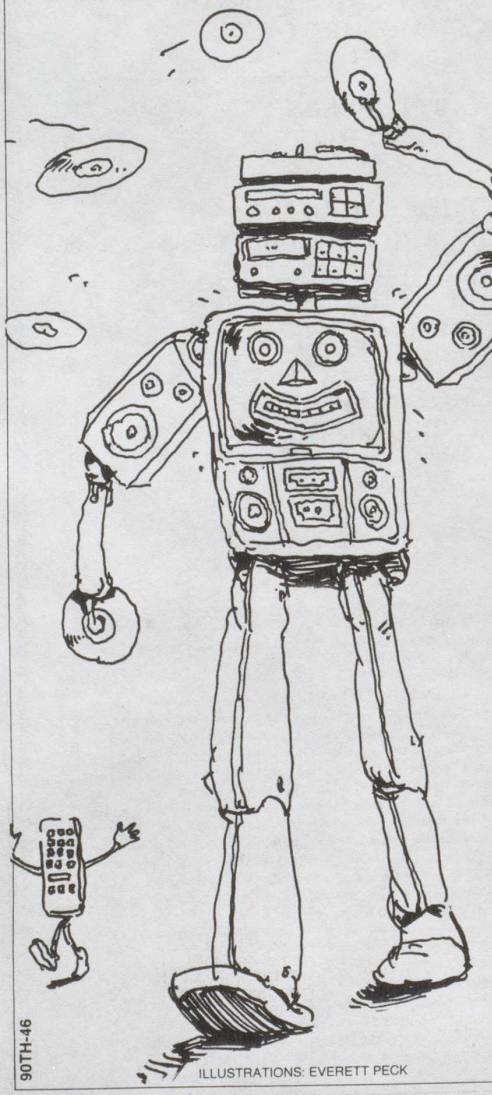
Billboard CHARTS the FUTURE

Home Computing

SCENARIOS FOR SUCCESS

By Larry Israelite

The obituary was short, and it appeared simultaneously in newspapers throughout the country. It read: "Born—1977. Died—1984. Cause of death—terminal neglect." Thus the death of the home computer was made public by those who had announced its birth; industry analysts who possess the power to make or break products, companies, or entire industries by making educated guesses.



ILLUSTRATIONS: EVERETT PECK

The obituary was premature—not because the home computer industry is still alive and well, but because it has yet to be born. There is no computer product that can be called a *true* home computer.

There are millions of computers in homes throughout the United States, but many are rarely used. And if they are used, it is mostly for playing games—most of which do not require data entry—or for work-related tasks that could be completed (somewhat less conveniently, perhaps) in an office. The home computer has been pronounced dead because industry anlaysts finally realized what many of the less informed had realized a long time ago: that the so-called home computers currently on the market are too expensive and too complex for general home use. The fact is, for computers to be successful in the home market, they must cost the same and be as easy to use as our more basic home entertainment equipment, such as stereo sets and televisions.

The Personal Computer

The device that has been referred to as the "home computer" is part of a larger computer category known as the "personal computer." The description "personal computer" was based on the notion that the computer was designed for use by one person. This use was in contrast to an earlier concept in computing known as "time-sharing"—many people sharing one relatively large computer. Personal computers first came into public view in the mid-1970s. Since then, scores of personal computers have come and gone, with none achieving the ultimate goal of becoming the first true home computer.

The first personal computer to make a significant impact on the market was the Apple II, which first appeared in 1977. By today's standards, the Apple was archaic, but at that time it was truly revolutionary. The Apple was small, could be connected to a television set, and could display up to sixteen colors. Several other personal computers, such as the Radio Shack TRS-80, the Commodore Pet, and the Texas Instruments TI-99, appeared at the same time as the Apple, or shortly thereafter. It was the Apple, however, that made the biggest impact and was to remain the industry leader for years to come.

As the popularity of personal computers began to increase, the notion of a computer in every home began to develop. Industry analysts predicted, and sales records indicated, that there were hundreds of thousands, if not millions, of people who were willing to spend up to $3,000 on a computer and all of the related equipment required to use it. So while the market shares of Apple and Radio Shack continued to grow, no one suspected that their dominance was about to come to a dramatic end.

In August of 1981 the IBM-PC was introduced. It represented IBM's entry into the personal computer market. The IBM-PC was not a revolutionary product. It had few, if any, extraordinary features. It was rated as being no more advanced than much of its competition. However, it was manufactured by the largest and most prestigious maker (and marketer) of computers in the world. The IBM-PC achieved market dominance almost immediately and became the industry standard virtually overnight.

Today the personal computer industry is still dominated by IBM.

The IBM PCjr Enhanced Model includes a slim-line diskette drive, 62-key infrared keyboard and 131,072 characters of user memory.

There is even an industry based on the manufacture of IBM look-alikes. Apple recently regained a small share of its lost market with the release of the Macintosh and the Apple IIC. Texas Instruments, while discontinuing its small personal computer (the 99 series), manufactures the Professional Computer, and Radio Shack offers a large personal computer line. While other large computer manufacturers—Digital Equipment Corporation, Data General, ITT, AT&T—have introduced personal computer product lines, none have come close to achieving the success of IBM.

The Personal Computer at Home

As was mentioned earlier, most of these personal computers were actually being purchased for business purposes, regardless of where they were ultimately used. However, at least three companies—Atari, Commodore, and Timex—did attempt to market computers designed specifically for home use. Commodore, selling the VIC-20 and the Commodore 64, was and still is the most successful, having attained a market share of over 50 percent. Timex, marketing the Timex/Sinclair 1000, was extraordinarily successful for a very short time, but their offering lacked power and was difficult to use. And Atari, while successful in the video game arena, was never able to achieve the necessary market penetration with its home computer products, resulting in its sale by Warner Communications.

Using the Commodore 64 as an example, let's examine what is required to begin *home* computer usage in earnest.

The Commodore 64 can be purchased almost anywhere, except—interestingly—in computer retail stores. It is relatively inexpensive (it can be purchased for just under $200) and there is a large body of available software. Why, then, is there no such thing as a home computer? The answer is simple: The Commodore 64 may cost only $200, but to do any serious computing, home or otherwise, you will need to purchase a few other things as well. For example . . .

First, the consumer must be able to use and store programs. That

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Home Computing

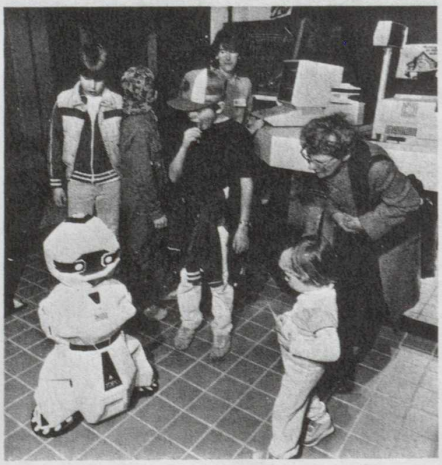
SCENARIOS FOR SUCCESS

(Continued from page 90TH-46)

requires a small cassette recorder and player; only Commodore's will work. Add about $60 to the purchase price of the computer. Two weeks after buying that, the consumer finds most good software is not available in that format, and even if it were, loading and storing programs on cassette is unbearably slow. The next purchase: a disk drive that costs about $250.

The next problem is how to view programs. The home television will work until others in the household want to watch a show when the computer user wants to compute. That old black-and-white tv in the guest room won't suffice, because, unfortunately, most of the software programs require color. In addition, the television display is such that the top and bottom lines of each display are lost. The only solution: the purchase of a $250 monitor. The $200 computer has now cost over three times as much.

There is still one other major expense: for meaningful activity, a printer is necessary—and a printer interface. Over $1,000 has been spent by this point, and still more must be, for floppy disks, paper, a printer stand, a computer table and the bottomless pit known as software. Total: at least $1,200.



There is one other point that must be made. Using a home computer is difficult. It isn't like loading a tape on a VCR or playing a record. In a nutshell, then, the home computer is a device that is expensive (when compared to other home entertainment devices) and is difficult to use (when compared to anything). Is there any doubt about the reasons for the demise of the home computer industry, or why some say it never really existed in the first place?

Selling the Product

Computer dealers, most of whom do not sell Commodore products, complained bitterly when Commodore allowed its products to be sold by stores that did not specialize in computers. Their complaint was that the computers would be purchased at discount stores (priced below dealer cost), but the computer retailers would be forced to deal with all of the problems—a charge that was not without validity. Other home computers are available from a wide range of retailers, but all "real" computers are available only at stores that restrict their sales to computer products. The point here is very simple: A product that can be sold only at specialty stores because it is so difficult to use is not yet ready for the mass market. Such was, and still is, the case with home computers.

Scenarios for Success

Before considering how computers might be used in the home in the near future, it is useful to consider how they are used now in common home entertainment devices. For example, the event timer in a VCR is controlled by a small computer, and compact audio players use a laser computer to read information from pieces of plastic (a small computer translates the information that the laser "sees" into frequency patterns that result in the music we hear). Almost any sophisticated electronic device makes use of embedded computers to operate. While these devices are not necessarily home computers, the technology on which they are based is identical.

So, what's in store for the near-term future of home computers? This question can best be answered by determining what home computers *must* and *will* be able to do before we willingly purchase them [illegible] have to be able to take the place of what currently requires a turntable, cassette deck, and compact audio disc player to do. A fully integrated home computer will enable us to do our banking, buy groceries, pay bills, set up doctor's appointments, and help our children do their homework. The computer will also show local movie schedules, let us study the menus from our favorite restaurants, and allow us to order and pay for concert and theatre tickets. It will remind us to mail birthday cards, take the car in for service, and call the baby sitter.

Also, the home computer must and will soon become more affordable. It must be able to perform all of the tasks listed above and still cost far less than it does today. This *will* happen in the near future, and this "real" home computer will change the way you live.

The best way to gain an insight into the ways in which computers will become integrated into our lives is to examine two products. The first product might be called the audio system of the future. The second product is actually a computer service that requires the use of a home computer. It, too, has the potential to dramatically alter the way in which we live.

Computerized Home Audio

The introduction of the Compact Disc brought home audio into the age of the computer in a serious way. The result was a quantum leap in the quality of sound reproduction available in the home. Unfortunately, the Compact Disc player is exactly that: a player. Currently, there is no product on the market that permits digital encoding of audio source material in the home. Individuals who like to record their own music must use cassette or reel-to-reel tape and accept the flaws in reproduction that accompany analog technology.

Early next year, however, sees the introduction of the Compusonics DSP-1000, a digital audio recording/playback system. If the DSP-1000 lives up to its manufacturer's claims, audiophiles will be able to make home recordings that match the quality of compact discs. Further, these recordings will be stored on 5-¼ inch floppy discs, the same as those used with almost all home computers. An additional feature of the DSP-1000 is that it will have an interface for the IBM-PC that will enable the user to manipulate the digital data stored on the floppy discs. The result is that old records and tapes can be "cleaned up," the sounds produced by voices and instruments can be changed—the user will be able to exercise complete control over the sound-reproduction process.

On the surface, the announcement of this product and the technology that makes it possible may seem like a relatively modest step forward. To understand why it may be more than that, it's necessary to briefly mention the ways in which digital data can be shipped into the home.

One medium that is currently used for shipping digital data over long distances is telephone lines. Unfortunately, the speed at which data can be shipped over existing phone lines is relatively slow (1,200 single pieces of information per second), and the error rate is relatively high. This makes shipment of large amounts of data via this medium somewhat difficult. In the very near future, however, a service will be available that will allow the shipment of 144,000 pieces of information per second over telephone lines with an extremely low error rate. The expectation is that twelve cities will have access to this service by early 1985. A second means of shipping digital data to the home is over cable television lines. With current cable technology, it should be possible to ship enough data to equal a 45-minute LP in less than 15 minutes.

What does shipment of data have to do with a digital recording/playback device? The answer is simple. Assume that the cost of the DSP-1000 (currently projected to be around $1,200 when it is introduced) drops at the same rate as other computer-based electronic devices. It will cost $200 to $300 in a few years. Then assume that there are low-cost, high-speed techniques for shipping digital data into the home. Making these assumptions, in the not-too-distant future consumers will be able to buy music at home, over telephone lines or through cable television hookups, and play it back through an audio device resembling a microcomputer. Let's look at two scenarios.

The first scenario involves cable television. One evening you decide that you would like to own a copy of the soundtrack of the video clip you just watched on MTV. You change the channel (using the keyboard on your home entertainment control module) so you can find out the name of the song and the access number under which it is stored in the cable company's data base. Then, after you load a floppy disk into your DSP-1000, you dial up the cable station, enter the access code and a "send data" code. When you receive a "data transmission complete" signal, the process is finished. The floppy disk now will contain the song, stored in digital form. All charges associated with the data transfer will be itemized on your monthly cable service bill, which you can see on the monitor if you so choose.

We are still several years away from a scenario such as this becoming reality. The reason, however, is not because the recording technology does not exist. The limiting factor will be the relatively low number of fully functional cable television installations. This

The second scenario, which involves the transmission of data across telephone lines, is slightly more realistic. The assumption on which this is based is that the availability of high-speed, low-error transmission of digital data will be limited in the immediate future.

As owners of a digital music system, consumers no longer want to purchase records or tapes. Instead, they want to purchase floppy disks on which to store music selections. Because they don't have access to high-speed digital communications lines, they must make their purchases at their local record store, which, with more sophisticated equipment than consumers have at home, is able to receive digital data directly from regional record company branches.

The customer goes to the record store and requests that a specific "album" be put on floppy disk. The clerk places a floppy in a disk drive, calls the branch, and places the order. A short time later, the disk is removed from the disk drive, tested, and the purchase is completed.

What makes this scenario interesting is that it identifies a new level of competition that will erupt among record companies and among music retailers. Those who possess the technology will sell the product. If digital music technology becomes the industry standard, those who will be most successful will be the firms that invest early and grow as the technology develops. As traditional sources of music in the home change, so must the industries that have traditionally supplied that music.

Two important points must be made here. First, although the scenarios presented above relate only to music, the same data-transmission techniques will be available for *all* digital data. Thus, as other forms of entertainment (e.g., video) are digitized, they, too, will become candidates for these scenarios. Very simply, music (and other home entertainment options) will become just another type of computer software.

Soon there will be stores that market computer software in the broadest sense of the word: music, games, education, applications. At the same time, stores that have sold music will continue to do so. The challenge for the music retail industry will be to become competent at marketing a type of product with which they have no experience. At the same time, traditional outlets for computer software will compete for music software business. At the very least, the competition should be interesting.

The second point is related to the contrast between the way in which we perceive home computers and other home entertainment equipment. Most of us own television, VCRs, receivers, turntables, cassette decks, etc. We perceive these devices as providing home entertainment. Some of us also own computers, but we perceive them differently. Home computers are used for other reasons, although we are not really sure what those reasons are. However, as technological breakthroughs occur, this perception will change. A computer will be the device that provides access to all other devices, that unlocks the digital world in which all home entertainment will reside. The computer will be an inextricable part of any home entertainment system. At the same time, however, the home computer will be a device that will help us in every aspect of our lives. Let's look at an example.

Yellow Data is a videotext service in Belmont, Massachusetts, that operates in a way slightly different from than of other such services: Yellow Data is free. Instead of the user paying for each minute he spends "looking" through Yellow Data's electronic data base, local businesses pay for the service by advertising their goods and services, just as though Yellow Data were a newspaper.

Yellow Data is accessed by dialing a local telephone number and then attaching your computer to the telephone (you need a modem for that—another $75 to $200). The first thing you see is a menu of options related to the different types of data bases currently on the system. The menu might include options such as "Entertainment."

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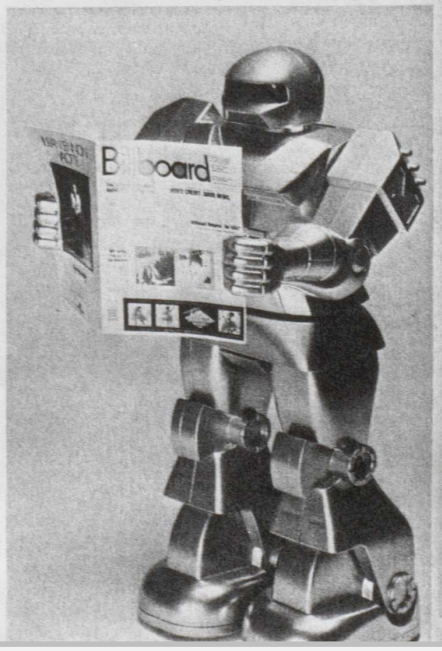

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Home Computing

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"Local News," "Shop-at-Home," and "Classifieds." Typing the first three letters of an option title allows you to gain access to that data base. The "Entertainment" data base, for example, contains information on movie schedules, local restaurants, concerts, and other similar events. The "Classified" data base contains information on both merchandise and services for sale. By making selections from the menus, you are able to locate the specific information that you are seeking.

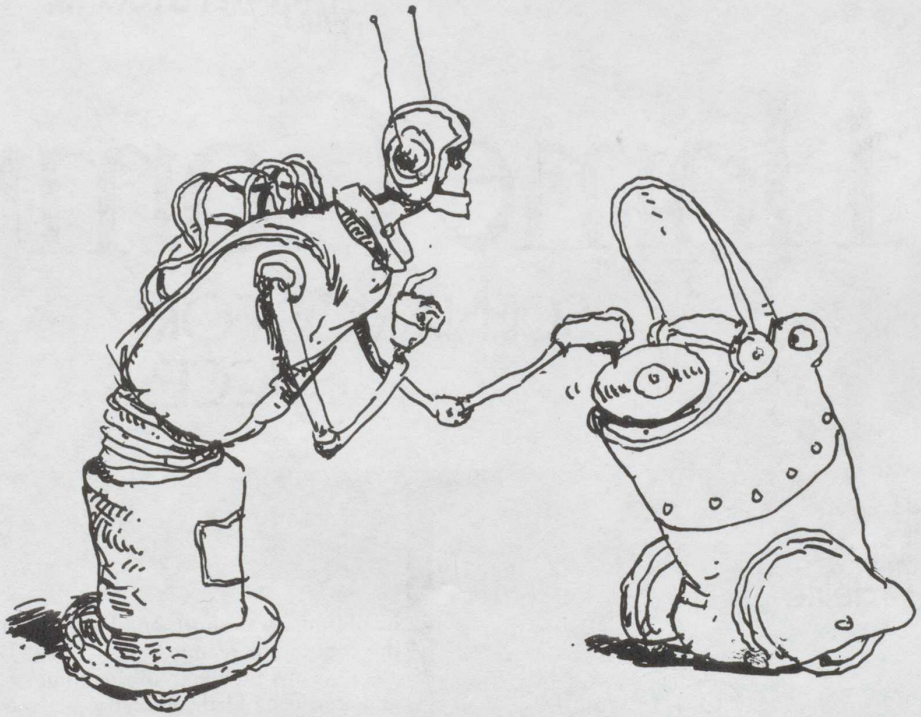
Today, Yellow Data's potential audience is limited to the number of people who have computers and modems—estimated by Yellow Data's president, Richard Koch, to be approximately 300,000 in the Boston metropolitan area. Of the potential audience, only a small portion currently use the service, although the number is increasing steadily. It is important to remember, however, that the home computer industry is still in its infancy. As a result, Yellow Data's *true* audience is not yet capable of making use of the service. However, as the number of homes that have computer-integrated home entertainment systems grows, so will Yellow Data's audience and market. Now let's look at how Yellow Data relates to music retailing.

If the consumer had access to a computer and to a service like Yellow Data, even that purchasing technique might become obsolete. Instead, he or she could look through a data base of songs available in digital form, indicate those wished to purchase, type in a charge card number and address, and the floppy disc would arrive in the mail two days later.

Using this scenario, each night, record stores would receive a list of orders placed during the day. Floppy disc recordings would be produced at night and mailed the next morning. It would be possible to purchase an entire music collection without leaving home. Almost all shopping could be accomplished in this manner, so computers in the home will have a major impact on the entire retail industry, not just on music retailing.

So what about the future? Will there ever be a market for home computers? The answer is "no" if you are asking if there will ever be a time when we will use computers in the home, the answer is a resounding "yes," and it will be in the very near future. But the home computer will not be a device that sits on a table somewhere in the home and exists as an independent entity. Computer technology will become a *part* of the home, just as telephone service, electricity, and running water are now. The impact of computers in the home will be felt in all facets of out lives and will affect everything we do.

Larry Israelite, Analyst, Data For The Future, specializes in microcomputers and video technologies.



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