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Microcomputers in the Home—Part I The Computer as a Resource

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To some the computer is a way to an effortless existence, and to others it calls forth images of depersonalization and electric shock treatment. For one family, the new electronic device brings order into a cluttered existence and improves the performance of family members at school and at work. For another family, it imposes new demands on the budget, on the living space, on leisure time, and on other scarce resources such as the television and telephone.

Yet, small-scale versions of machines that revolutionized business management are projected to enter millions of households in the near future. The microcomputer has become part of the household equipment.

A closer look at the technology and the terminology helps you understand the potential for computers in the home.

The term **computer** can be applied to a variety of electronic devices that are able to perform according to a programmed set of instructions.

The term **personal computer** is the new micro-sized machine. It also refers to the machine's friendliness—how easily a person not trained in computer programming or operation can make it perform.

The term **household computer** refers to a small, fairly portable machine with a typewriter keyboard (for the user to communicate to it) and a television-like screen (for it to communicate to the user).

For household applications, other devices are desirable—a printer for making paper copies of computer output, data storage cassette tapes or disks, and linkage to a telephone so the computer can be used as a **terminal** to communicate with other computers. **Hardware** refers to the equipment and **software** to the instructions or programs that tell the hardware how to perform.

Another useful term for the computer glossary is **micro-processor**—it is the brain of the microcomputer. These also exist as tiny, special-purpose computers that now are being installed in appliances and automobiles. Most people are using these computers already and don't realize it.

What functions can the computer perform for the family?

Household applications can be categorized into several areas—entertainment and education, record keeping and calculating, communications and information, and electronic monitoring and control.

Entertainment and Education. For computer hobbyists, the hardware itself is fun and educational. For most people, commercial software will be the source of entertainment and education. It's entirely possible, as with television, that a given program can do both. Even the most modest personal computer can do these functions.

For children, mathematics, language, and even some aspects of art and music, can be fun with a computer as a tutor. Since most microcomputers have keyboards like typewriters, learning to type on a computer is easy with instant feedback on accuracy and speed. Computer-assisted instruction will help you learn a foreign language.

Record Keeping and Calculating. The computer has the ability to store huge quantities of information and manipulate it with incredible speed. (It is similar in this respect to the human brain, but with even better accuracy.) This speed and accuracy is of obvious advantage in a business or institution. It can offer something in the home as well.

Financial records are the most likely application; grocery inventory and menu planning can be another. Because any material made up of words or numbers can be stored and readily accessed, computers can be used as word processors or calculators. Word processors edit and reproduce written messages and calculators manipulate numbers according to programmed instructions. For the record-keeping and word-processing functions, devices such as a printer and data storage are required components.

Communication and Information. For this application, the computer should be considered an extension of the telephone. In fact, there may not be a computer in the home at all but the equivalent of the telephone with a monitor for displaying information and perhaps a printer for making paper copies of it. The “computer” exists in a distant operation where the information is stored. This terminal operation could allow the household to access current information from the stock market, the weather bureau, the bank, retail stores, and news services.

Electronic Monitoring and Control. The computer has already earned its place in the home for this purpose. The common household thermostat is an analog computer that can be programmed to monitor and control household temperature. The timers that turn lights on and off are programmable control units. Ranges and microwave ovens have microprocessors to control the timing and temperature for cooking. These may seem like simple applications but they are sensible uses for electronic technology, can be acquired at modest cost, and require very little learning for the user. It should be emphasized that the microcomputers marketed today for household use do not offer these benefits.

Who Benefits?

The computer’s contribution to an efficient business operation gives a clue to household use. This is where there is a home business operation. There the efficiencies of computerized record keeping for inventory control, payroll, names and addresses of suppliers and customers, checking-account records and other business-related functions may be used in the home. The family farm operation is a natural situation for a microcomputer to assist in managing the farm operation and providing benefits to the home and family as well. A real estate or insurance salesperson operating out of the home is another likely candidate for a satisfied computer owner who can combine home and business use.

Even a small home business operation may benefit from a microcomputer. For example, a day-care owner may find it useful in keeping records of children enrolled, receipt of payments from parents, and an inventory of food and other supplies. Announcements to parents could be produced with a word processor that allows for individual messages within a form letter.

A crafts production and marketing business operating out of a home might maintain a mailing list of customers and suppliers and an inventory. A family member who works as a volunteer can maintain mailing lists or bookkeeping for non-profit organizations. And, of course, there is the possibility that the computer itself becomes the home business—clerical and bookkeeping services performed with a microcomputer may find a ready market in the community.

A writer from *Personal Computing* said, “At this tender stage in the home information revolution, many of the

most convinced and enthusiastic users are people who get double duty from their computer systems—benefits related to their jobs as well as practical concerns of the family.”¹

Those who delight in keeping neat records for household management will enjoy the computer’s unlimited storage and instantaneous search-and-find capacity. Financial records, recipes, pantry and freezer inventories, Christmas mailing lists, and other files, once entered, can be maintained and accessed with speed and accuracy. For example, if a homemaker is willing to enter recipes into the computer’s storage system, the machine can instantaneously find the “biscuit recipe from Marge,” or the “appetizer recipe that uses salmon.” This does save time compared to searching a card file or several cookbooks. Also, the recipe can be printed for use in the kitchen and the copy discarded after use—no messy cards with chocolate fingerprints. Finally, the computer can do the calculations necessary to change the quantities of ingredients if a larger or smaller number of servings is needed.

Other attributes that contribute to the appeal of the computer are that it is very quiet (except for the printer and some games) so can be used without disturbing others. There is none of the vibration found in typewriters and there is less of the clutter typical of processes that use paper rather than electronic storage. One’s work can be put away with the touch of a button.

Individuals can assess their own traits as a guide to their potential for being a satisfied computer user. Persons who have good finger dexterity, like good typists and pianists, will be more efficient users. One need not use mathematical skills to use a computer, but a person who is comfortable with the logic of mathematics will find computers easy to use.

For a family seeking a new indoor leisure pursuit, the microcomputers available for household use provide appealing hobbies for children and adults. Some persons are intrigued with the electronic equipment (hardware); others are absorbed with programming (software). Some of these efforts can result in custom-designed applications for the family, yielding a benefit from a leisure-time pursuit. It is important that at least one member of the family finds the technology appealing, and is willing to devote leisure time to making the most of its potential.

Most children find the computer appealing, at least for a time, and are less intimidated than adults. A child will find it an enjoyable companion offering learning opportunities that are not limited by a teacher’s or parent’s time constraints. Perhaps children with learning problems may find it a helpful tutor if they are motivated to work alone. A machine can offer words of positive reinforcement, but does not embarrass the child when a mistake is made.

These are the potential benefits waiting for the computer purchaser. But is this assurance that benefits will be great enough to justify the purchase? The answer depends on the particular household circumstances, the characteristics of the potential users, the attributes of the

product itself, and of course, the value of alternative uses for the money required to purchase a household computer system.

The computer will make demands on time, money, and space. Any benefits must be viewed in light of these demands.

Will it save time?

Time is the scarce resource in many households. New equipment is expected to perform household tasks and free time for more enjoyable activities. If a family has a business operation that can use computerized record keeping, there will likely be a net savings in time. But for the typical household, it is difficult to imagine any net savings because of the time required to learn to use the equipment and the programs.

So, benefits will have to be compared to the time it takes to use the computer. Is the improvement in family records worth the time required to enter the family's expenditures into the machine? Is the grocery list prepared by the computer an improvement over one prepared by pencil, if you have to keep the machine updated on items purchased and used?

One person reports "a marginal benefit in time saving—entering data in the computer versus organizing on paper—but a 'phenomenal' improvement in getting usable information from raw data, and manipulating it in ways that weren't possible before."²

The ideal household computer system should be fed daily information about financial transactions, menus and dietary intake, appointments on the family calendar, and all other data required for the machine to reach its full potential as a household resource. It is understandable if this system comes to be more of a demand than a resource.

The entertainment and educational potentials of electronic technology offer a new leisure pursuit. But, there is little assurance that the machine will free time for other leisure pursuits beyond playing with the computer. Maximum benefits can be attained only by people who are willing to devote time to learning to use a variety of hardware devices and software packages.

The financial demands

The cost for a home computer can vary according to the sophistication in equipment and diversity in programs. The consumer will find this purchase a complex one because of the jargon used by computer manufacturers and programmers. Modest systems are appealing in price (less than \$1,000) but may be nothing more than game-playing machines that become inadequate as the family's needs and interests expand. Some "beginner" packages lack a monitor (the family television is used instead) and a printer (no permanent record can be produced on paper). On the other hand, the more sophisticated packages may be so costly (\$4,000 or more)

that the family cannot possibly feel satisfied with the return for their investment.

The demands for money do not end with the initial equipment purchase. The buyer should anticipate other expenses at the time of purchase and some ongoing expenditures as well (*see GH 3812, Guide to the Prospective Purchaser*). Expenses for electricity are small. But, if the computer is used as a terminal with telephone linkage, an extension phone or even another line for long-distance, telephone charges will be significant (\$25 to \$75 a month). Special interest magazines for computer users abound and are attractive sources of the latest information on hardware and software. If you don't read them at the library, subscriptions must be added to the ongoing expenditures. Classes in microcomputer programming are helpful to many new users—they may be found at community colleges, in adult education programs, or from computer dealers, but are rarely free.

What are the space requirements?

A familiar question will be "Where do we find room for it?" For computer game-playing, a place that can fit a card table is all that is needed. For more diverse uses, additional space may be necessary for extra equipment (printer and data storage devices) and for storage of instructional manuals, data storage disks, printer output and paper supplies.

It is conceivable that having a computer perform the functions of entertainment and household recordkeeping may reduce the demands on space. The equivalent of many boxes of board games, puzzles, and other toys can be stored on magnetic disks in a box smaller than a book. Also, large amounts of household financial information or the equivalent of many recipe books can be stored on a single data disk. This can save space if the computer truly **substitutes** for the other games and toys, and for the file folders, canceled check boxes, and recipe cards. Of course, electronic storage is no substitute for valuable papers such as receipts for tax purposes and insurance policies.

The other space-related question is "Where is the best location in the house?" A central location will provide convenient access for regular input of the family record-keeping data. If the machine is to be used for menu planning, it should be near the kitchen. If it's used for family financial records, it should be near the desk used for bill-paying. If it's used for the family appointment calendar, it should be near the telephone. For educational pursuits, it should be in a quiet area and for games it is best in a recreation area. The computer that needs to be connected to the television or telephone must be placed near them.

You can move the machine from room to room as needed, but such a practice is questionable with such expensive equipment. The inclination to record expenditures and grocery purchases may not be strong enough to survive moving equipment from game room to the den.

Other attributes of the physical environment for the computer need attention. The microcomputers do not need any special house wiring, but the complete configuration of devices (processor, monitor, printer, etc.) may need several electrical outlets. The producers of multi-outlet strips with built-in off-on switch and overload protector are going to find a ready market among home computer owners. Another environmental concern is static electricity. Anti-static insulators may have to be placed on the surrounding floor area or in the equipment itself. Interference from radio and television signals is a problem for users in some locations.

Lighting is an important consideration if the equipment is used in conjunction with printed material. The computer monitor is easiest to read in not-so-bright lighting, but printed copy needs strong lighting in an otherwise dimly-lighted room. Finally, if the machine is used for long periods a good, adjustable office chair is advised to reduce fatigue.

What will be the impact of this new technology on the mental and physical health of family members?

The impact of technology on humans is now readily acknowledged. It is only reasonable to expect that the introduction of a computer into the home will be noticed, in unfavorable as well as favorable ways. Living space and household expenses are not the only domains likely to be affected; leisure time and family relationships may also be influenced by the home computer.

The home computer is another resource that must be shared. This may not be easy for American families that are no longer accustomed to sharing their bathrooms, telephones, or televisions. The dilemma arises when the machine is enjoyed and used by several family members. There may be conflict in deciding whose turn is next. If it is not in demand, then is it paying its way?

The new household computer can be captivating for children and adults. Some parents may be delighted that children who were restless and purposeless with their time before a computer was purchased are now spending constructive hours absorbed with educational games. In other situations, the computer will absorb time in game-playing that would have been spent in household tasks, school assignments, or piano practice.

Although promotional material for home computers often show Dad, Mom, and a couple of interested children

enjoying an educational game, it's more likely to be an individual endeavor. Concentration is required for many activities, and even with many games, one child has to watch while another plays. These activities are more likely to lead to isolation of the family member, rather than to interaction. It is inherent in the machine that your face must be turned to the computer, not to another person. On the other hand, the microcomputer may provide the opportunity for family members of all ages to share in the general experience, if not in most activities. It is possible that a youngster may become the best programmer in the house and have much to teach Mom and Dad about the machine. This shared learning provides a needed balance in a world where adults have so much to explain to kids.

In using a microcomputer, one "talks" with the fingers, and "hears" with the eyes; such activity may stifle the development of a well-balanced personality. There is reason to question the substitution of electronics for parent-child interaction in the process of learning multiplication tables or in playing a game of chess. Certainly a lot is lost in the translation. Martin Ringle of Vassar College notes that "(computers) may turn out to be more patient, more compassionate, more intelligent, and more trustworthy than the human beings in the child's world. They also eliminate the need for imagination." He also questions "what emotional ties will children have to their computers and to machines in general? And what about the child's relationships with other children? Will it be preferred to human companionship? (There is already mounting evidence that some 'hobbyists' prefer the company of their console to that of other human beings.)"³

In anticipating the effect on children, the similarity in some respects between computer use and television viewing must be recognized. Much of the concern over children's addiction to television has been in respect to the lack of social interaction with parents and other children, and the restrictions on vision and posture imposed by watching a "tube." These concerns are just as relevant for addiction to computer games. While it is true that television and the microcomputer can bring much of the world into the family room, to what extent should we experience the world through looking at a television or computer monitor?

¹"Computers in the Home Come of Age," *Personal Computing*, September, 1981, p. 109.

²"Time, Money Earned in Home-Computed Finances," *Personal Computing*, October, 1981, p. 88.

³Ringle, Martin. "Computer Literacy: New Directions and New Aspects," *Computers and People*, November-December, 1981, 30:11-12.