

Advances in Consumer Research: A Conceptualization of the Household/ Technology Interaction



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A CONCEPTUALIZATION OF THE HOUSEHOLD/TECHNOLOGY

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Abstract

The traditional approach of viewing household/technology relationship is limited to the nature of adoption of technologies. We believe that in order to develop a meaningful analysis of this relationship one must go beyond mere adoption and examine the entire process consisting of not only adoption but the patterns of use as well as the impact of technology on household dynamics. In this paper, we attempt to conceptualize this issue by proposing a model of household technology structure. Embedded in this structure are the household social space. The paper examines the links between the three components as a means to understanding the household/ technology relationship.

There has been an increasing interest in recent years among consumer researchers in household behavior and consumption (Etgar, 1978; Firat and Dholakia, 1982; Roberts and Wortzel, forthcoming). A particular aspect of the household consumption which is the main focus of this paper is the use of technology in the household. A major rationale for studying the household-technology relationship has been clearly stated by Nicosia (1983): "Technology is usually associated with production processes and various social science disciplines have researched the effects of technology in work activities The effects of technology in consumption activities have been largely ignored or taken for granted By focusing on the family as the institutional setting for a great deal of consumer behavior, we should gain a better understanding of the interdependencies between technology and consumers"

A surge of interest in technology and households has been triggered by a multiplicity of factors. The entry of married women into the labor force has created the possibility that households might be acquiring a greater number of time saving devices. (Strober and Weingberg, 1977, 1980; Reilly, 1982). Some time-budget research has also been reported in Europe and in the U.S. looking at related issues (Szalai, 1972; Michelson, 1980). The emergence of modern information technology such as videotex and home computers has aroused much popular interest (Time, 1983) as well as scientific interest (Moschis et al., 1983; Venkatesh and Vitalari, 1983).

This paper is based on three premises. First, in understanding the household-technology relationship, the conventional approach has been to look exclusively at the household and not the technology itself. A balanced approach would require that we not only examine the nature of the household but also the characteristics of household technologies.

Second, we have pursued a line of thinking in our paper which attempts to distinguish between the three processes: adoption, use, and impact of technology in the context of a micro-social system which is called the household. While adoption is an important component of the technology/consumer interface, it provides but an incomplete picture of the totality of the interface itself, only because it is limited to the initial stages of consumer contact with the technology. It is this concern

that the entire process merits examination.

Third, we posit that households have internal ecologies and value systems which come into play in adopting new technologies. Although a balancing of exogenous (i.e., external to the household) and endogenous (i.e., internal) forces is not unique to the household, the particular manner in which it is accomplished differentiates households from other social institutions.

In the next section we discuss some issues from current literature. This will be followed by a presentation of a model of the household technological structure and a development of the relevant ideas.

Households and Technology: A Synthesis of Traditional Concerns

In the past 50 years, households have adopted several technologies. Some obvious examples are household appliances such as washers, dryers, and refrigerators; entertainment oriented products such as television and stereo; transportation and communication devices, such as automobiles and telephones. These technologies have had a variety of impacts on the household. Some of the technologies have replaced manual labor, some of them have significantly reduced it, and a few others have, transformed totally the character of the household.

In reviewing the relevant interdisciplinary literature on household technologies we find three interrelated themes: the relationship between household technology and (a) time savings, (b) women's employment, and (c) sex-linked division of labor.

The first and major theme relates to the potential that some household technologies represent in saving time in the performance of housework. Morgan et al. (1966) found families with more automatic home appliances estimating more hours of housework than those with fewer appliances. Robinson et al. (1972) and Vanek (1978) also reported results partially confirming this result. Obviously there are some explanations for such counter intuitive findings. Walker (1969) has suggested that over the years the product of housework has attained a better quality (e.g., cleaner clothes, clean house, kitchen, etc.) and to a large extent this has been made possible by newer technologies. Additionally, there seems to be a trade-off of more repetitive and routine housework to a more managerial type of activity. Thus there seems to be a shift in internal allocation of the housewife's time.

The other theme that runs through some of the studies has to do with the relationship between modern household equipment and women's employment. Strober and Weinberg (1980), contending that employed wives utilize different methods to reduce time pressures, tested the hypothesis that they own more durable goods than nonemployed wives. It was, however, found that the wife's employment was not significant either in the purchase decision or in the amount of expenditures on durables. The study was replicated by Nichols and Fox (1983) whose findings confirmed Strober and Weinberg's study.

A third theme relating technology to household appears in the literature on sex-linked division of labor and women's employment. Consumer researchers have been discussing the division of labor and women's employment. Consumer researchers have been discussing the division of labor at home in terms of husband and wife participation in various household activities (Davis and Rigaux 1974; Davis 1976; Ferber and Lee 1974; Spiro 1983; Wortzel 1980). The general thrust of the argument presented by most authors is that the changing roles of husband and wife have resulted in some task-oriented shifts. In this discussion there is little mention as to what role technology has played in permitting or inhibiting joint activities. Some social scientists have argued that modern household technology plays a significant part consistent with the maintenance of sex-linked roles in families, at the same time making it possible for women to work outside the home (Thrall, 1982; Vanek, 1978). Zimmerman and Horwitz (1983) have echoed a similar thought in connection with the emerging information technology and its impact on the household. "What will women be doing inside the 'high tech house'? They will be shopping and checking out their groceries, paying bills and maintaining bank accounts, keeping household records and inventories, storing utility meter readings, handling correspondence, booking travel tickets"

To summarize, the traditional concerns of household technology have paid more attention to the concept of time management and savings and the impact on women's roles in the household. We believe that while the link between household technology and time management is critical, there are other factors that need scrutiny because they determine to a significant extent the adoption, use, and impact of technology. First, there are household technologies which are not task oriented and where time dimension may not be as critical. Second, modern households are forced to be more self-reliant and live in a more atomistic environment than households of earlier times. This means that the internal structure of the household needs to be examined carefully. Third, the mere ownership of household appliances, which has been the research focus of some of the consumer researchers, adds very little to the understanding of household/technology relationship. The factor that needs to be measured is the extent of use and the reasons for such use.

We first begin by formulating a model of household technological structure and follow it up with a discussion of the components of the model.

A Model of Household Technological Structure

In Figure 1, we present a model of household technological structure. The structure is represented by three conceptually distinct spaces which may be called, (a) the household social space, (b) the household activity space, and (c) the household technology space.

The first component of the model is the household social space. The social space gives rise to social interactions within the household and leads to specific household activities. Since our discussion in the earlier section has captured some of the main issues underlying the social space, we will not touch upon them more fully in this paper.

The second component, the household activity space, consists of various activities performed in a household. In different households different priorities exist for performing these activities and much of it is determined by the first component of the model, the household social space.

The third component, the household technology space, is made up of the process domain (consisting of technology

adoption, the use patterns, and its impact), and domain of dimensionality. The interaction of these two domains is the primary rationale for this paper.

A feature of the model that is of concern in this paper is the relationship between household technology space and activity space. As we demonstrate in the next section, several household activities depend upon the availability of relevant or appropriate technologies. Another feature of the model is the link between the social space and the activity space. Although not discussed in this paper, this is an important link and should be included in a more comprehensive treatment of the topic.

What is the significance of the model presented in Figure 1?

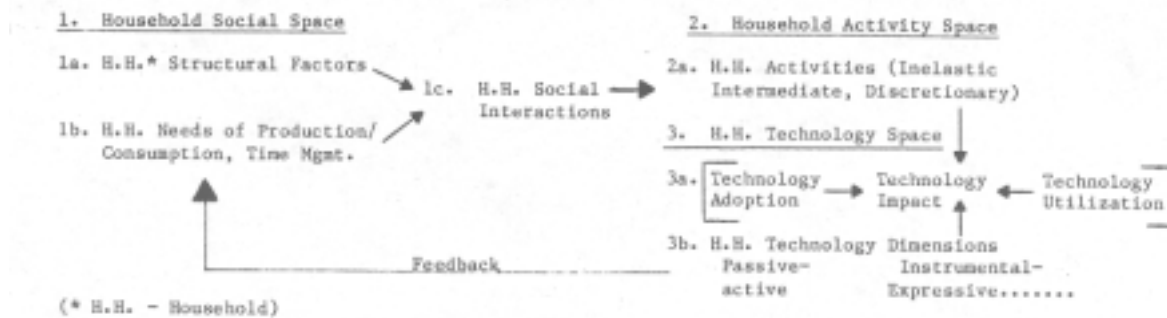
The technological structure of the household is complex. It determines (a) the household commitment and expenditure of time, energy, and resources to meet its production and consumption needs, (b) the operation of the system of its activities, and (c) the patterns of household interactions relative to its production and consumption goals. The model is also based on the recognition that household decisions to adopt technologies and develop appropriate usage patterns are influenced by the need to save time, to manage efficient operations, and to render the household as self-reliant as possible. Given that most households, at least in the contemporary western world, are endowed with modern household gadgetry, what differentiates the households from each other is the character of their technological structure of which the acquisition or possession of technologies is but one small component. As an illustration, it seems obvious that as households go through different life cycle patterns, different technologies come into play. Young, single people buy more entertainment oriented technologies; parents with children have a greater need for washing machines, large refrigerators; and so on. But such explanations touch only a small part of the household technology picture. They say very little about why different households with similar characteristics have different consumption patterns and different consumption patterns and different use configurations of technology. Unless one takes a total -view of technology in the household and examines how it is embedded in the social context of the household, the analysis will remain less than adequate.

Households as Activity Systems

A useful conceptualization of a household is that it is a place where some activity or other goes on continuously when members of the household are present. Different technologies permit the performance of these activities at different levels of efficiency and with different results. Until recently households were viewed as consumption systems. A more recent approach to the study of households has been to regard them as both consumption and production systems (Becker, 1976). The role of household technology as a facilitator of the production and consumption processes is intuitively obvious. It is directly tied to the various activities that are part of production and consumption within the household. An example of an activity which is part of the production process is meal preparation and a related consumption activity is eating. Most household technologies may be viewed as contributing to the production process in the household. There are also technologies which are directly used in consumption activities such as listening to radio or watching television, etc.

Although households were already equipped with most of the modern gadgetry by the mid-fifties or early sixties, the advent of recent information technologies have opened up new patterns of production and consumption.

FIGURE 1. A MODEL OF HOUSEHOLD TECHNOLOGICAL



In order to capture the overwhelming presence of technology in the household we have constructed a large sample of activities performed in a normal household in a developed society and the corresponding profile of technologies associated with activities (Table 1). Following Hendrix et al. (1979), we have identified three types of household activities: Inelastic (IE), Intermediate (IM), and Discretionary (D).

A close examination of Table 1 shows two important results. First, most households are technologically very dependent. That is, the incidence of household technologies is reasonably high in the average household. Second, most household technologies are geared toward the production process rather than the consumption process. The implications of these two findings are several.

The first concern is, other things being equal, how difficult it is to introduce new technologies into households especially when the existing level of technological incidence is rather high. If we were to imagine a household with a finite technological space, each time a technology is added the space continues to fill up. The closer the space is to saturation, the more difficult it is to add technologies. Under what conditions is it then possible to introduce new technologies? We hypothesize that either the technologies should have considerable differential advantage or the households have to undergo structural shifts to permit introduction of new technologies. But the situation is not so simple. For example; although not intuitively obvious, one can further state that the level of incidence of a household technology does not indicate a corresponding level of use. Consequently, new technologies are easier to introduce if the level of use is high. Households which are active in the use of technologies are the ones likely to be receptive to new technologies.

A final implication is that technologies which are more oriented toward production process in the household are more readily adopted and used than technologies which are consumption oriented. The reasoning behind this is that production technologies can directly contribute to performance efficiencies such as task reduction, time savings, reduction in manual effort, et c. Second, more activities in the household are production oriented than consumption oriented. Production is also a more elaborate process than consumption. Also, philosophically, there seems to be a quality of virtue associated with production; production somehow represents value added while consumption detracts from it. It is easily forgotten, however, that in a household the production and consumption go hand in hand.

Not all the activities shown in Table 1 are performed in every household. The adoption and use of technologies in the household is a function of the characteristics (and needs) of the household and the nature of the

technology itself. Traditionally, consumer researchers have focused on the adoption processes to the exclusion of use processes. The limitation of adoption models is that they are single even decision models and say very little about the pattern of interaction between households and technology. In order to understand this interaction we propose to examine first the nature of the technology itself and follow it up with an analysis of the household as a social system with its unique Characteristics.

The Dimensions of Household Technologies

In this section, we discuss the dimensions of household technologies. Such an analysis will provide us with a better understanding of the role technologies play in the modern household. It will also reveal to us the potential that the technologies represent in altering household dynamics. For our discussion we consider five dimensions: (a) Instrumental vs. Expressive; (b) Task Oriented vs. Pleasure Oriented; (c) Passive vs. Active; (d) Unifunctional vs. Multifunctional; and (e) Low Social Impact vs. High Social Impact.

(a) Instrumental-Expressive:

The instrumental-expressive dimension is an adaptation from Parsons' classification of pattern variables (Parsons, 1951). The instrumental role of technology regards it as a tool which meets some specific functional goals of the household. In order that a given technology may be utilized successfully to realize instrumental goals, one can posit that the user has the knowledge of how the technology can be utilized, has the ability to cope with the technological demands and actually uses it to meet very specific functional needs. Some examples of instrumental goals are: need achievement, task performance, cost savings, and efficient use of time. For example, the telephone permits people to conduct business and establish instantaneous contact with others at great distances. Also it allows two-way communication and speeds up transactions. Such examples can be provided for other products as well. The instrumental dimension of computers would refer to their application in a variety of uses such as management of home activities, word processing, family education, and maintaining various financial records that serve economic functions.

The expressive side of technology refers to the possibilities that technology creates in communicating emotions and affections and expressing family related values through opinions and/or behavior. *People engage* in games and entertainment as a means of conveying their *feelings toward* others. Such activities have a high personal and psychological meaning in the context of the household.

A hypothesis relevant to the **expressive-instrumental** dimension is that households consider both expressive and instrumental needs in the adoption and use of technologies. However, the balance between the needs varies with each situation. Typically, technologies which are rich in their ability to satisfy both expressive and instrumental needs are likely to be more important in a household.

Table 1. A Sample of Household Activities and The Use of Technologies

	ACTIVITY	TYPE TECHNOLOGY USED	INCIDENCE OF TECHNOLOGY
		2	3
Household Chores	Cleaning Laundry	1M Vacuum Cleaner	H
		1M Washer, Dryer	H, H
Food Management	Food Proportion	IE Electric Stove, Coffee Machine, Food Processor	MH,M,M
	Food Preservation /Storage	IE Refrigerator	H
	Food Disposal	IE Garage Disposal, Trash Compactor	M,M
Home Management	Tax Records	D Calculator, Computer	M,VL
	Financial Records	D Calculator, Computer	M, VL
Child Care	Playing w/Children	1M Electronic Games	LM
Leisure Position	Outdoor Recreation	D Automobile	N
	Home Entertainment	D Radio, Stereo, TV, VCR	H,H,H
Socializing	Visit Friends	D Automobile	H
	Communication	D Telephone	H
Leisure			
Outside dome	Movies, Theater, Sports Events	D Automobile	H
Job Related	travel	IE Automobile	H
	Work at Home	U Computers, Typewriter	L
Vacationing	Travel	D Automobile	H

(1 For a fuller version of the Table write to the author)
 (2IE - Inelastic, III - Intermediate, D - Discretionary)
 (3H - High, M - Medium, L - Low)

(b) Task Oriented-Pleasure Oriented:

Technologies can be characterized as task oriented or pleasure oriented. Generally speaking, task oriented technologies are not pleasurable. The lack of pleasure is derived from the nature of the task involved in using the technology. Although there is a relationship between task-pleasure dimension and passive-active dimension, they are not the same. Specifically, task oriented technologies involve a series of manipulative steps and possibly repetitive operations. For *example*, Fried and Molnar (1975) have identified three different variables that describe the task diversion: (a) serial characteristic variable, (b) operations-output relations variable, and (c) output form variable. The first variable states that sequential behavior pattern is measured on a temporal scale (i.e., turning the light switch versus wall papering). The second variable measures the degree to which operations that produce outputs are characterized by their separation. The last variable refers to the degree to which the operations are subject to routinization. Thus the task oriented nature of technology refers to the specific acts the user has to perform before the technology can be put to intended use. The task orientation of the technology is also determined by the underlying motivation for the technology. For example, most household chores are task oriented. Cooking, washing, cleaning are obligatory activities and the technologies that enable these activities to be performed (e.g., microwave oven, washing machine, vacuum cleaner) may be termed task oriented because of the nature of the work. Another example of task oriented technology is the typewriter which involves physical work at a constant rate. Technologies can also be task oriented because of the boredom factor involved.

(c) Passive-Active:

Technologies can be classified as passive or active from

the user point of view. In general, passive technologies require less human manipulation and less physical or intellectual effort on the part of the user as compared to active technologies. For example, a vacuum cleaner needs human involvement from start to finish but the clothes washer does not. While human intervention is one component of passive/active dimension the other component relates to the effort required to operate a particular technology. Most household technologies require minimal intellectual effort because their principal function is to routinize tasks. On the other hand they may require different degrees of physical effort from low to high.

The determining characteristic of passive technologies is the ability of the user to be able to be a recipient of the output of the technology without having to actually manipulate its production. Another characteristic of the passive technology is the possibility for the user to be engaged in other activities while still controlling the technological activity.

An example of passive technology is television. The effort required by the user to engage in television viewing is rather minimal. While the television is still on, there is very little that the viewer needs to do except sit back and watch it. The automobile, on the other hand, is an example of active technology. While the automobile is in motion, the driver is fully occupied with its performance and is continuously busy manipulating the various functions. Many other technologies in the household occupy a position somewhere between the two.

The consumer acceptance of a particular technology is not solely determined by the passive or active nature of the technology. There are other dimensions of the technology which need to be considered. However, one can make a statement that other things remaining equal, the consumer would prefer a passive technology. Or more specifically, given two versions of the same technology, it is safe to say that the individual would prefer the passive to the active version.

(d) Unifunctional-Multifunctional:

Technologies can also be classified as unifunctional or multifunctional based on whether they are designed to perform a single function or many different functions. A function refers to the designated purpose of the product and its functional meaning usually determines the major task implied by the purpose and the product label usually encompasses its meaning. Some products connote a cluster of meanings we have a single meaning represented by the product, then we call the product unifunctional; otherwise it is multifunctional.

For *example*, most home appliances are unifunctional (e.g., dishwasher, vacuum cleaner, clothes dryer, etc.). Automobiles can be called multifunctional because of the implied cluster of meanings. Although automobiles are vehicles used for transportation (i.e., single function), they can be used for work or for vacationing or for shopping. These different activities are not only perceptually unrelated but are contextually different. Therefore, automobiles can be called multifunctional. Televisions can also be considered multifunctional because of the versatility of the programming such as entertainment, news, education, culture, etc. Home computers are clearly multifunctional. There are several clearly identifiable distinct applications of computers (business applications, home management, education, etc.) which make it appropriate to classify them as multifunctional.

Multifunctional technologies increase the complexity of task management for the household. They require greater manipulative abilities and lead to a higher degree of

technological dependence. For example, when an automobile breaks down, there is a greater crisis in the household than when a toaster breaks down. At the same time, multifunctional technologies lead to a greater source of satisfaction because of the number of tasks they can perform.

(e) Social Impact:

Some technologies have had greater social impact than others. Social impact refers to the manner in which existing modes of life are altered. The greater the impact, the greater the change. All technologies create an impact of some sort. For example, the television technology has had an impact on the media habits of the public, their attitudes and behavior toward entertainment and the interaction between family members. Home appliances appear to have had a lesser impact whereas the automobile had a major impact. We talk about the automobile culture as if a whole range of values and life style patterns have developed around the automobile. The degree of social impact caused by a technology is an indication of the deep-rooted nature of the technology. New technologies may try to create new life patterns, change old life patterns or preserve the existing life patterns. To the extent that they attempt to change old life patterns, they meet with great resistance.

We have shown the nature of the social impact of different technologies in Table 2. Clearly, the technologies that have had the greatest impact in the twentieth century are the automobile, telephone and television

A Multidimensional Profile of Household Technologies

As demonstrated in the earlier section, the household technologies can be embedded in a multidimensional space. In Table 3 we have tentatively proposed a profile of a number of household technologies along different dimensions discussed earlier. We believe such a presentation is useful in positioning technologies in a common multidimensional space. In order to make comparisons manageable we have used a single category "home appliances" for washer, dryer, dishwasher, refrigerator, et c., because all of these products seem to be located rather identically along different dimensions. Table 3 allows us to evaluate virtually a variety of technologies according to some implicit patterns and position them along some dimensions which allow comparisons regardless of the specific nature of the technology.

Table 2 Technology	Direct and Derived Effect. of A Sample of Direct Effects	Derived Effects	technologies Social Change (High Impact)
Automobile	Quicker, convenient mode of transportation	Suburban living Community of strangers, Weakening of kinship ties	Freedom from family bonds, Divorce, Separation of families
TV	Opportunities for home entertainment	Changing family interactions, Changing media habits	Educational impact, Children's socialization
Household Appliances	Reduced time for household chores	Release time from household chores, more time for leisure	Leisure oriented society

Also, we are able to evaluate technologies not only in terms of their adoption potential but in terms of their actual use. The concept of evaluating technologies or products on different attributes is not new. Fundamental to most consumer research is the notion that consumers make product adoption decisions based on product attributes. Thus an automobile is purchased using some standard criteria such as miles per gallon, seating capacity, styling etc., but such attributes are unique

to a single product, automobiles. But when we begin to compare household technologies, such product specific attributes do not make much sense. We, therefore, have to abstract the attributes of technologies to the structural level of activities which are embedded in the totality of the household system.

Some attempts have been made in the past to classify household durables into aggregate categories. Economists have traditionally discussed household durables in terms of necessities and luxuries (Houthakker 1960). "Necessities are defined as those goods which are bought in the same quantities regardless of changes in prices or incomes" (Douglas and Isherwood 1979). The distinction is somewhat artificial and technical and perhaps a little too simplistic. For example, a luxury today can easily become a necessity tomorrow. Similarly, a luxury for some may be a necessity for others. Also, what is adopted as a luxury may turn out to be a necessity after continued use while at the same time a necessity might become a luxury in some special cases.

We are more in agreement with the distinction proposed by Hendrix (1984) between "time buying" and "time saving" technologies. A limitation of this classification for our purpose, however, is that such a measure is limited to technologies where time management is critical. This is not true of all the household technologies.

Conclusions

Household technology has become both a cultural convenience and a natural necessity and has been institutionalized into a life of its own. Markets and services have developed around household technologies and as we from technology as a machine to service to information on to a way of life, we see a new age of complexity emerging.

Despite the compelling presence of technology in the household, the general view of household/technology relationship is rather fragmented because the treatment of the household as a social organization is still preindustrial and the household is still regarded as secondary to the external institutional arrangements which are, for the most part, products of the industrial age.

This paper, hopefully, has made a start in the right direction to understand the household/technology relationship.

References

Becker, Gary S. (1976), "A Theory of the Allocation of Time," *The Economic Approach to Human Behavior*. G. S. Becker, ed., Chicago: University of California Press.

Berk, Richard A. (1980), "The New Home Economics: An Agenda for Sociological Research," *Women and Household Labor*, S. F. Berk, ed., Beverly Hills, CA: Sage.

Davis, Harry L. (1976), "Decision Making Within the Household," *Journal of Consumer Research*, 1, 51-62.

Douglas, Mary and Baron Isherwood (1979), *The World of Goods*, New York: Basic Books.

Et gar, Michael (1978), "The Household as a Production Unit," *Research in Marketing*, J. N. Sheth, ed., 1, JA Press.

Feldman, Laurance P. and Jacob Hornik (1981), "The Use of Time: An Integrated Conceptual Model," *Journal of Consumer Research*, 7 (4), 407-419.

Table 3. A Multi-dimensional Profile of Selected Household Technologies

INSTRUMENTAL/EXPRESSIVE	AUTOMOBILE	TELEVISION	STEREO EQUIPMENT	CAMERA	TELEPHONE	HOUSEHOLD APPLIANCES	TYPE-WRITER	HOME COMPUTER
Mostly Instrumental						X	X	X
Mostly Expressive		X	X	X				
Both Instrumental/Expressive	X				X			
TASK - PLEASURE								
Mostly Task						X	X	X
Mostly Pleasure		X	X	X	X			
Both Task/Pleasure	X							
PASSIVE - ACTIVE								
Mostly Active	X						X	X
Mostly Passive		X	X					
Medium				X	X	X		
MULTI-FUNCTIONAL-FUNCTIONAL								
Unifunctional			X	X		X	X	
Low Multifunctional	X	X			X			
High Multifunctional								X
SOCIAL IMPACT								
High Impact	X	X			X			X
Medium Impact								
Low Impact			X	X		X	X	
HOUSEHOLD LINK TO EXTERNAL ENVIRONMENT								
High	X	X			X			X
Low			X	X		X	X	

Ferber, Robert and Lucy Chao Lee, "Husband-Wife Influence in Family Purchasing Buyer," Journal of Consumer Research, 1, 43-50.

Firat, A. fuat and Nikhilesh Dholakia (1982), "Consumption Choices at the Macro Level," Journal of Macromarketing, 2 (Fall 2), 6-15.

Fried, J. and P. Molnar (1975), "General Model for Culture and Technology," in Technological Forecasting and Social Change, 8 (2), 175-188.

Hendrix, Philip E., Thomas C. Kinnear, and James R. Taylor (1979), "The Allocation of Time by Consumers," Advances in Consumer Research, 7, 35-40.

Hendrix, Philip E. (1984), "Antecedents and Consequences of Time Use: Proposed Pleasures and Preliminary Evidence," Advances in Consumer Research, 11, 35-40.

Houthakker, H. S. (1960), "The Influence of Prices and Incomes on Household Expenditures," Bulletin of International Institute of Statistics, 37.

Michelson, William (1980), "Spatial and Temporal Dimensions of Child Care," SIGNS, 5 (3), 542-547.

Morgan, J., I. Sirageldin, and N. Baerwaldt (1966), Productive Americans, Ann Arbor, MI: Institute for Social Research.

Moschis, George P., Thomas Stanley, and Jac L. Goldstucker (1983), "Will Consumer Acceptance of Videotex Services Affect Marketing," working paper, Georgia State University.

Nicosia, Franco (1983), "Consumers, Information, and Structural Changes in the Family," paper presented at the ACP. Conference.

Parsons, T. (1951), Toward a General Theory of Action, Cambridge: Harvard University Press.

Reilly, Michael d. (1982), "Working Wives and Convenience Consumption," Journal of Consumer Research, 8 (4), 407-418.

Roberts, Mary Lou and L. Wortzel (forthcoming), Changing Household, Boston: Ballinger Company.

Robinson, J., P. Converse, and A. Szalai (1972), "Everyday Life in the Twelve Countries," in A. Szalai et al., The Use of Time, The Hague: Mouton Press.

Strober, Myra H. and Charles B. Weinberg (1977), "Working Wives and Major Family Expenditures," Journal of Consumer Research, 4 (3), 141-147.

Szalai, A. (1972), The Use of Time, The Hague: Mouton Press.

Thrall, Charles A. (1982), "The Conservative Use of Modern Household Technology," Technology and Culture, 23 (2), 175-194.

TIME (1983), "Machine of the Year," (Computers), (January 3), 12-39.

Tydeman, John (1982), "Videotex: Ushering in the Electronic Household," Futurist, 16 (1 February), 54-61.

Vanek, Joann (1978), "Household Technology and Social Status: Rising Living Standards and Status and Residence Differences in Housework," Technology and Culture, 19, 361-365.

Venkatesh, A. and N. Vitalari (Forthcoming), "Households and Technology: The Case of Home Computers- Some Theoretical Issues," in M. L. Roberts and L. Wortzel, Changing Household, Ballinger Publishing Co.

Venkatesh, A. and N. Vitalari (1983), "An Empirical Study of Home Computer Adoption and Usage," working paper, University of California, Irvine.

Walker (1969), "Homemaking Still Takes Time," Journal of Home Economics, 61 (October), 621-624.

Wortzel, Lawrence H. (1980), "Marital Roles and Typologies as Predictors of Purchase Decision Making for Everyday Household Products: Suggestions for Research," Advances in Consumer Research, 212-216.