
Eva Heiskanen and Mika Pantzar Toward Sustainable Consumption: Two New Perspectives

ABSTRACT. The article is an integrative, theoretical paper addressing the problem of sustainable consumption. It provides the insights of two conceptual frameworks on the conditions for and limits to sustainable consumption. Existing consumer research on environmental issues is reviewed. It is argued that consumer research is not focusing on the right issues in this area and that a trans-disciplinary approach is called for. Frameworks from materials balance economics and evolutionary theory are presented and applied to recreational consumption. Three major areas are identified in which consumer research could contribute to the presented frameworks, and to the theory and practice of sustainable consumption.

Environmental problems are one of the greatest issues of our times. Besides environmentalists, they now invoke concern among politicians, business managers, and scientists, to say nothing of ordinary consumers around the world (Cairncross, 1991; Ester, Halman, & Seuren, 1993; Schmidheiny, 1992). Until the present, most of this global concern has been expressed primarily in words and less in deeds. Yet this does not have to mean that those who express concern are opportunistically living by double standards. Integrating sustainable development with a market and growth driven economy is not an easy job.

One part of this enormous problem is the search for sustainable consumption and sustainably oriented consumer research. Consumption is the reason why anything gets produced, and consumption and production together are the source of all man-made stress on the natural environment. In a market economy, the main responsibility for environmental degradation thus lies with the consumer. Realistically, however, ordinary consumers have little knowledge of the links between consumption patterns and their consequences, and have little real power to affect the market place. In a highly industrialized society, knowledge and responsibility are so diffused among economic actors that no one really feels responsible (Jamieson, 1992; Heiskanen, Kärnä, & Lovio, 1995).

The need to find sustainable consumption patterns is accentuated

by their role in global environmental politics. Many third-world politicians are reluctant to discuss population growth as long as consumers in industrialized countries consume most of the world's resources. On the other hand, billions of people around the world are striving to attain a Western standard of living. If current consumption patterns in industrialized countries are replicated as such around the world, the earth's carrying capacity will be exceeded (Durning, 1994; Meadows, Meadows, & Randers 1992; Ryan & Flavin, 1995).

As yet, there is no clear definition of sustainable consumption. As with sustainable development, we could call consumption sustainable when it meets "the needs of present generations without compromising the needs of future ones" (World Commission, 1987). With a growing population and the limited carrying capacity of nature, these simple criteria are not easily met (Durning, 1994; Meadows et al., 1992). It has been estimated that to achieve sustainability, energy consumption in the Western world must decrease by at least 40% (World Commission, 1987). Schmidt-Bleek (1993) goes even further and argues that the resource intensity of Western industries must decrease by a factor of ten.

What challenges does this present to consumer research? In this paper, we shall start by presenting a review on what environmental issues have been studied in consumer research and how they have been approached. On the basis of this review, we shall argue the following points:

1. *Consumer research has not (yet) focused on the really important issue.* By this we mean that from the point of view of sustainable consumption, the issues that consumer research has dealt with are rather trivial. The recycling of soda bottles, whether people are prepared to pay for "greener goods," or the application of household energy conservation measures are all interesting issues in their own right. From the point of view of sustainable consumption, these individual issues are insufficient. They do not provide much basis for drastically reducing the resource intensity of Western lifestyles. In this paper we will try to present an approach that addresses the environmental impact of consumption as a whole in terms of resource intensity.

2. *Research on sustainable consumption requires a trans-disciplinary approach.* The approaches applied in consumer research may be considered more or less voluntaristic. However, even the earliest studies on energy conservation demonstrated that structural factors and

habitual behaviour influence consumer behaviour to a considerable extent. Understandably, such factors have not seemed very interesting, as they are not easily manipulable. Also, there are few relevant analytical instruments to study the structural determinants of consumption patterns, let alone practical instruments to change them.

As a means of grasping the evolution of current consumption patterns, we will draw on evolutionary theories. In a later section, we present an *evolutionary network perspective*, which attempts to span the relationship between nature and the consumption of commodities in our economy from an interdisciplinary perspective.

Environmental issues are hybrid problems: Caused by social and economic behaviour, they are mediated through technical systems and affect the natural environment, which in turn has social and economic impacts. Thus, analysis of these issues requires inputs from a variety of disciplines. As the French sociologist Latour (1991) has put it, we need explanations spanning from human hygiene to the hole in the ozone layer. We believe that consumer research has much to contribute.

ENVIRONMENTAL ISSUES IN CONSUMER RESEARCH

Research on environmentally relevant consumer behaviour has been sparked by two crises and one opportunity. The crises are the energy crisis in the 1970's and the solid waste crisis in the 1980's. The opportunity is "green consumerism," which emerged during the late 1980's and early 1990's. The existing consumer and behavioural research can be classified as follows (Cook & Berrenberg, 1981):

- research directed at attitude change;
- research directed at behavioural change when attitudes are positive, by providing social reinforcement or informational incentives;
- research directed at behavioural change independent of attitudes, e.g., by providing social or economic incentives;
- research directed at removing barriers to behavioural change;
- research directed at stabilizing behavioural change, e.g., through feedback.

In 1981, a special issue of the *Journal of Consumer Research* was devoted to energy issues. Articles included a study from the Netherlands on household energy use (Verhallen & van Raaij, 1981),

Canadian studies on electricity (Heslop, Moran, & Cousineau, 1981) and transport and household energy use (Ritchie, Gordon, McDougall, & Claxton, 1981), and a US study on behavioural adaptations to energy conservation (Tienda & Aborampah, 1981). Generally, it was observed that attitudes, values, and consciousness are of minor importance in determining environmentally responsible behaviour. Physical home characteristics, such as insulation and wind orientation, and structural household variables, such as dwelling and vehicle descriptors, were found to be the major determinants of energy use (Ritchie et al., 1981; Verhallen & van Raaij, 1981). Only price consciousness appeared to be of some relevance (Heslop et al., 1981), but social, environmental, or energy consciousness was not related to energy use.

In spite of expectations expressed in this special issue, consumer energy research has not turned out to be “rapidly emerging as an area of extreme social and economic significance – an area in which the behavioral researcher can assume a leading and significant role” (McDougall, Claxton, Ritchie, & Anderson, 1981). In fact, interest in consumers’ energy conservation behaviour waned after the energy crisis, especially in the US, although less so in Europe. Loss of interest within consumer research may also be due to methodology. Consumer research has been dominated by the information processing view strongly emphasizing the cognitive aspects of consumption and decision making. Academic consumer researchers direct most of their efforts at early-stage decisions, such as problem recognition and information search, and low-level ones, such as product variant selection. Much less attention has been directed at strategic consumption decisions, or at the process of consumption itself, or at its ultimate results. Hence, the social and environmental consequences of consumption have also been largely overlooked (Wells, 1993).

The solid waste crisis provided a new impulse for environmentally oriented consumer research. Recycling was identified as one way to divert waste from landfills, and behavioural researchers were seconded to aid recycling programmes. From the late 1970’s onward, motivational and behavioural factors affecting consumers’ recycling habits have been studied.

Two reviews (Pinsky & Andersson, 1994; Thøgersen, 1995) show that a number of approaches, mostly similar to those in the energy conservation issue, have been applied. Informational strategies have been tested, and although the relationship between knowledge and

behaviour is weak, prompting techniques and especially feedback strategies have proved to be useful in motivating recycling behaviour. Reinforcements and disincentives have sometimes proved to be effective, but have not always been efficient or useful in practice. In any case, attitudes toward recycling are mainly based on altruistic motives. However, here as elsewhere, the connection between attitudes and actual behaviour is tenuous. Social norms have been utilized and reinforced using the “block leader” strategy, i.e., finding people who are prepared to propagate recycling in their neighbourhood. Convenience and situational factors have been observed to be of major importance, as has habit. In fact, Bagozzi & Warshaw (1992) have questioned whether it is attitudes that impact behaviour or *vice versa*, finding evidence for the claim that behaviour moulds attitudes and motives.

What seems to emerge from research on these two crises is that environmentally related behaviour is closely connected to structural factors, such as type of dwelling, and to long-standing habitual behaviour. Both are largely the result of earlier consumption decisions. Although not conclusive or strongly explanatory, behavioural research has provided some practical guidance for conservation programmes. Economic and social incentives have sometimes been effective in recycling, but not always strongly explanatory or cost-effective in practice. However, the importance of convenience as a determinant of conservation behaviour has been recognized and put to good use in programme planning.

Generally, positive environmental attitudes are not strong predictors of specific types of environmental behaviour (Cook & Berrenberg, 1981; Moisander & Uusitalo, 1994), which has been reflected in modifications of the Fishbein-Ajzen model (e.g., Ölander & Thøgersen, 1995; Pieters, 1991). These modifications, and a number of methodological corrections, have provided for fairly good attitude-behaviour consistency. At an analytical level, the issue seems to be fairly well in hand. This does not do away with the practical problem that, in spite of environmental concern, few of us consumers are going out of our way to significantly change our behaviour.

Green consumerism was one of the major innovations of the 1980's. Increased environmental awareness heightened the interest of the business community in environmental issues (Cairncross, 1991; Schmidtheiny, 1992). Suddenly, environmental issues constituted not only threats, but increasingly also opportunities for business. For the

1990's, the great innovation is the greening of business. This includes environmental product assessment and design for the environment, as well as green marketing and communication initiatives (e.g., Callenbach, Capra, Goldman, & Marburg, 1993). Environmental improvement has been linked to total quality management, making "continual improvement" the catch-phrase of the day.

In spite of all the enthusiasm, green consumerism has not turned out to be all that was expected of it. Actual willingness in the market to pay for greener products is much less than predicted by surveys. Furthermore, the issue of "what is green" has become increasingly confusing. Widespread use of green marketing claims has also led to some consumer disillusionment (Cude, 1993; Wendorf, 1995) and has provided us with the new term "greenwash."

Yet, much serious improvement is also under way. Important consumer research issues in this area are the connections between green buying and consumption styles (Shrum, McCarty, & Lowrey, 1995; Winkler & Voller, 1992), what trade-offs consumers are prepared to accept in return for greener products (e.g., Lavik & Egner, 1995; Wong, Turner, & Stoneman, 1996; Zinkhan & Carlson, 1995), and how environmental improvements can be communicated to consumers in an effective and acceptable way (Cude, 1993; Wendorf, 1995).

However, it is increasingly recognized that continual improvement is just not good enough. The challenge of sustainable consumption is something quite different. It is an issue of consumption patterns as a totality, not buying greener shampoo or recycling soda bottles.

Consumer research has been surprisingly silent on the environmental impact of increasing consumption as a totality. The area has been left to environmentalists and philosophers (Rolston, 1988; Singer, 1993). These authors often present somewhat unsophisticated and prescriptive ideas on needs and consumption. To them, the issue presents itself mainly as a moral one, and the solution suggested is a new set of values (Durning, 1994). It is easy to agree that value change is needed, but new values are not swiftly taken up. Values are embedded in culture, both material and social. Earlier instances of the emergence of values such as basic human rights have demonstrated that deep-seated change is not a swift process. New values are not easily translated into practice. The dissemination of such ideas, and the setting in place of supporting institutions takes at least a hundred years. Obviously, we cannot wait that long for sustainable consumption.

THE ENVIRONMENTAL RELEVANCE OF CONSUMPTION PATTERNS:
RESOURCE INTENSITY AS A MEASURE

The issue of changing consumption and production patterns has gained increasing interest in the aftermath of the 1992 Rio summit organized by the UN Council for Sustainable Development. It is topical again, this year, as the UN General Assembly Special Session focuses on issues in the Agenda 21 that require extra efforts. Developing sustainable production and consumption patterns is one of these issues.

During these years, new conceptualizations of sustainable consumption have gained ground. Policy-makers and members of the public have been presented with concepts such as Materials Intensity per Service unit (MIPS) (Schmidt-Bleek, 1993; Ayres & Schmidt-Bleek, 1995), carrying capacity (e.g., WBCSD, 1996), and environmental space (Sustainable Europe, 1995). The basic idea behind these different, but related concepts is that the current rate of use of natural resources is unsustainable. Even though substances, energy sources, and production processes vary in their environmental harmfulness, all use of natural resources places a burden on the environment.

Although we will not go into this argument in depth, there is a sound scientific-rational basis for this way of thinking, exemplified by the following quote from two environmental chemists, Baccini & Brunner (1989): "On the basis of today's scientific knowledge, it is hardly possible to prove the long-term compatibility of a substance on the basis of short-term experiments. . . . to allow, for example, only an increase of 10 to 20% in the geogenic fluxes by anthropogenic activities . . . could be called a very prudent procedure, based on and admitting honestly the current state of ignorance." The idea of minimizing material flows is not new (see Allenby & Richards, 1994; Ayres, 1978, 1989, 1994; Daly, 1980; Georgescu-Roegen, 1971; Karlsson et al., 1994; Kneese, Ayres, & D'Arge, 1970; Tibbs, 1992). It has only recently gained a widening acceptance in environmental and even economic policy, however (Brundtland, 1994; Spaargaren & Mol, 1994; Waller-Hunter, 1994).

The general approach in this line of thinking on sustainable consumption is to decrease materials use sharply. This is required especially in Western economies, which use most of the world's resources while consumers in developing countries still lack many of the material comforts that we take for granted. Decreasing materials use need not necessarily mean less consumption in monetary terms, which would

put an end to economic growth, but can also mean a shift to less resource intensive types of consumption. Such a programme would allow for the pursuit of social sustainability, as a decrease in materials intensity may correspond with an increase in the labour intensity of goods and services (Sustainable Europe, 1995; Schmidt-Bleek, 1996).

The importance of resource intensity is exemplified by a scenario by Schmidt-Bleek (1994) of what will happen if Western consumption patterns are replicated by a growing world population (Figure 1). Currently, one fifth of the world's population, we Western consumers, use four fifths of the world's resources (Column 1). If our consumption patterns were replicated in third-world countries, a four-fold material flow would be required (Column 2). By the year 2050, with double the current world population, global material flows would be eight times as large as at present (Column 3).

One measure of resource intensity is energy intensity. From a consumer's point of view, energy consumption can be classified as either direct energy consumption (fuel or electricity used by households, e.g., gasoline for driving, electricity for cooking or refrigeration) and accrued or indirect energy consumption, i.e., the energy used to produce the goods and services that households obtain (Nurmela,

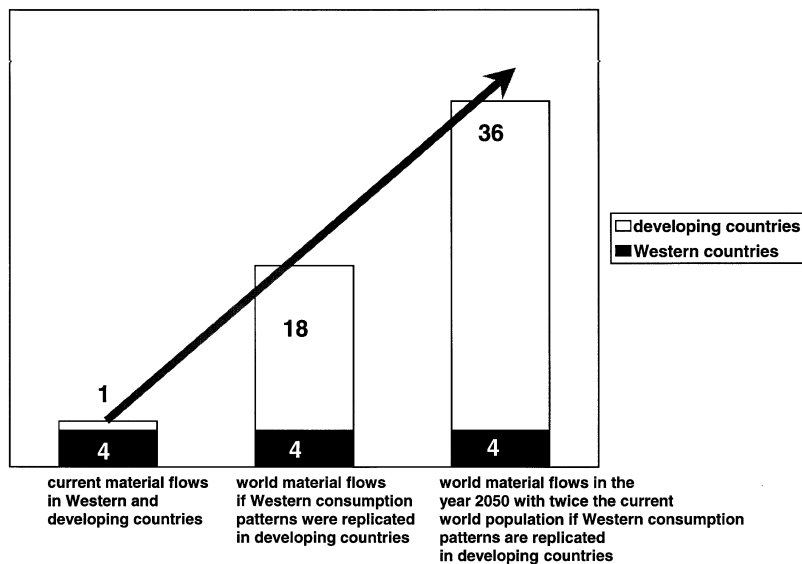


Fig. 1. Current and projected global material flows (Schmidt-Bleek, 1994).

1989). The concept of accrued energy shifts the focus of energy conservation from the energy-efficiency of individual appliances to the increasing amount of products, services, and infrastructure needed in modern consumer societies. The growth in consumption easily counteracts advances in the energy efficiency of individual products or processes. Recent Dutch (van Engelenburg, van Rossum, Vringer, & Block, 1994) and Finnish studies (Nurmela, 1993) have estimated the energy intensity of consumption patterns. Each day, an average Western consumer utilizes about 300 MJ of energy (which is equivalent to the daily nutritional energy that would be required by 29 slaves). Most of this energy is derived from fossil fuels, the production of which is the main cause of global warming, acidification, and many local environmental problems. Of the energy used by consumers, about half is used directly as fuel for cars, space heating, and electricity, while the rest is accrued through goods and services.

What is this energy needed for? We rearranged energy use data (e.g., Mäntylä et al., 1992; Nurmela, 1993; Paauw & Perrels, 1993; for more details, see Heiskanen & Pantzar, 1993; Pantzar, Raaijas, & Heiskanen, 1995) into end-service categories, combining both accrued and direct energy consumption under the categories "transport, information, and leisure," "home and hearth," "meals," "public services," and "hygiene and clothing." The aim of this classification was to look at categories that provide a unified type of service, such as food, shelter, or recreation, but may include a variety of different products and services.

Transport, information, and leisure fall into the largest energy consumption category. Here, energy is required for the production of goods, such as cars and television sets, for their use in the form of electricity or fuel, and for the construction and maintenance of infrastructure, such as roads and cables. The category "home and hearth" includes energy used for home construction, heating, lighting, and furnishing, space heating being the largest individual item in Finland in terms of energy use. Meals take up about one-fifth of the total energy consumption. This includes energy used in agriculture and fertilizers, industrial processing, packaging, distribution, sales, car-use for shopping, home storage, and cooking, as well as washing dishes. Public services, including the construction and maintenance of schools and hospitals and the materials used in such institutions, make up about 14 per cent of the average consumer's total energy use. The production and maintenance of clothing and personal hygiene (including, e.g.,

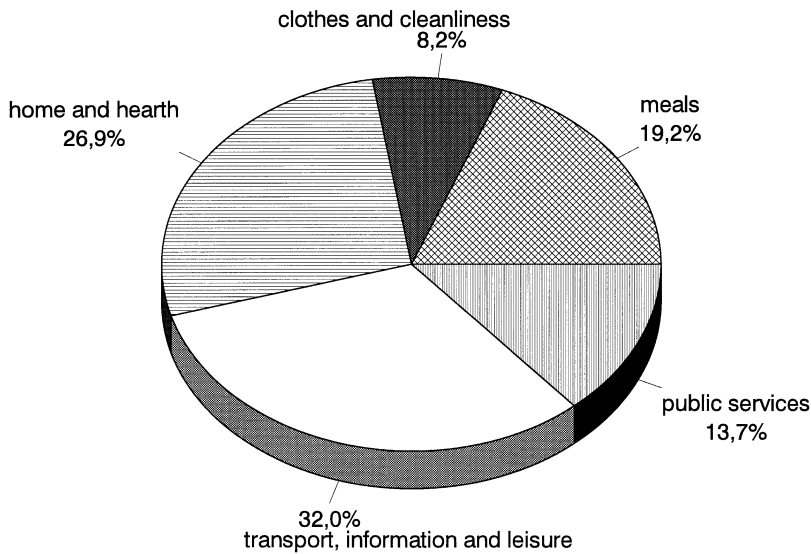


Fig. 2. Total energy consumption by consumption category.

showers, laundry detergents, and clothing production) account for less than ten per cent of the total energy consumption (Figure 2).

Looking at consumption from this perspective provides a sobering reminder to those enthusiastic about “greener” products. Although product alterations and environmentally conscious buying can alleviate individual problems, they are a very small drop in the ocean of resource intensive consumption. The results are an eye-opener, but how do they affect consumer research? Very fundamentally, actually. Resource intensity is a rough measure of the weights on one side of a balance: the externalities of consumption. On the other side of the balance, there is the *raison d'être* of consumption: the *service* or utility provided to consumers by the consumption of goods and services.

Service Efficiency

Service efficiency is a central concept in materials balance economics (Kneese et al., 1968), and is now gaining broader attention in the context of sustainable consumption. Service efficiency may be defined as providing a maximum of useful end-services to consumers using a minimum of materials and energy, thus risking minimal environmental disruption. Lehmann and Schmidt-Bleek (1993) have

formalized the concept with the term MIPS, meaning Material intensity per service. End services may be characterized in a number of ways, as needs, as activities (Baccini & Brunner, 1989), as functional product units (SETAC, 1993), or as standard of living (Schmidt-Bleek, 1994). The main point is that it is not the products as such that provide consumer satisfaction, but services such as warm living space, meals, information, or recreation. Goods and services obtained by the consumer in the market are only means of producing this service – in simplified terms, “service-producing-machines” (Tischner & Schmidt-Bleek, 1993). In principle, it is possible to deliver end-services in a number of different ways, using different combinations of market goods and services and household labour. This concept of utility is related to the approaches based on work by Becker and Michael (1973) and Lancaster (1966) within consumer economics.

The concept of service efficiency presents many opportunities for consumer research to contribute to sustainable consumption. When developing less resource intensive patterns of production and consumption, existing products and services will have to be radically reformulated. Thus, the concept of utility to the consumer, i.e., the actual end-service delivered to or required by the consumer, must be defined. A clear conception of the end-service – not defined in terms of existing products – would help to identify sustainable business opportunities as well as environmentally sustainable, yet socially acceptable, lifestyles.

Furthermore, increased service efficiency may be achieved not only by decreasing the environmental intensity of providing a given service, but also by extracting a greater number of services from the same amount of materials. Innovative concepts for new, low-intensity products based on the MIPS concept are currently being developed (Tischner & Schmidt-Bleek, 1994; von Weizsäcker, 1994). One example is a product that replaces the conventional refrigerator: a new household cold-storage system built into the outer wall of an apartment, thus utilizing the heat differential between the inside and the outside of the house as an energy source, and providing a product that is five times as durable as the traditional refrigerator (Schmidt-Bleek & Tischner, 1996). Evaluating the prospects of such innovations requires knowledge on which aspects of the service are essential and inelastic (e.g., the need for cold storage), and which ones can be moulded or substituted fairly easily (e.g., the need for a separate refrigerator in the kitchen).

In the following, we will attempt to illustrate the resource intensity approach – and the insights that it provides – with our own (Heiskanen & Pantzar, 1993; Pantzar et al., 1995) and Finnish colleagues' (Mäntylä, 1995; Mäntylä et al., 1992) findings on the resource intensity of a consumption category of growing importance: recreation and information.

The Environmental Relevance of Recreation and Information as an Example

Humans do not live on bread alone; recreation is a fundamental human need. Although the need for recreation and information exchange is universal, the end-service is diffuse and difficult to define. It involves, among other things, social contacts, collective identity, relaxation, excitement and stimulation, physical enjoyment, intellectual and artistic satisfaction, the satisfaction of curiosity, and the alleviation of uncertainty (Holt, 1995; Scitovsky, 1976; Silverstone, 1994).

Today, information technologies and recreational goods and services are also growing industries. The share of consumption of products and services related to leisure in the European Union was about 10 per cent in 1993. Growth rates are assessed to be about 3 per cent for the category in general (Leyland, Schwarz, & Crawford, 1991). Information and recreation are also central themes in visions of post-industrial society (e.g., Bell, 1973). Investigating their resource intensity provides some evidence as to how “post-industrial” these consumption categories actually are: whether shifts in consumer preferences and production factor structure can be counted on to provide economic growth while keeping energy and material flows stable (e.g., Jänicke, Mönch, Ranneberg, & Simonis, 1989).

Recreation as an end-service may be produced using a myriad of different goods, services, and their combinations. Finnish time use studies indicate an average of 6 hours a day of spare time (somewhat more than in the US, but somewhat less than in, e.g., the Netherlands). Television takes up one hour and three quarters of that time, which is close to the European average (Niemi & Pääkkönen, 1992). Other important recreational activities include reading, sports, spending time with friends, family and relatives, driving to and from sports or cultural activities or just for fun, and travel. The energy intensity of major recreational activities is presented in Figure 3.

The energy intensity of recreational consumption consists, on the

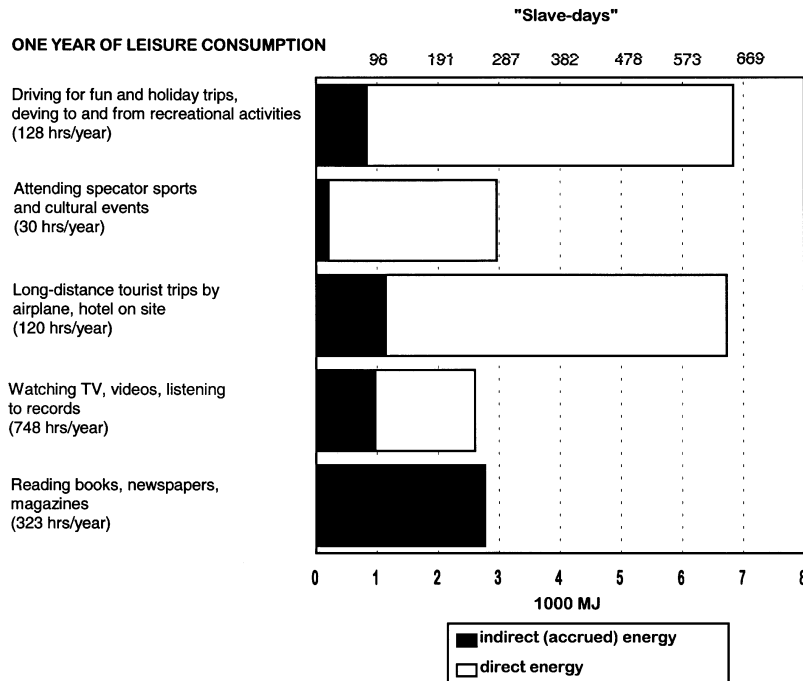


Fig. 3. An average consumer’s yearly energy consumption through major recreational activities.

one hand, of the energy required to produce the products and facilities used for recreational activities, such as roads, cars, books, aeroplanes, and televisions. On the other hand, energy is required to operate these products in the form of fuel, electricity, etc. We did not manage to cover all recreational items; only half (about 3 hr.) of the average daily spare time is accounted for. The other half consists primarily of sports activities and of socializing with friends and family, which do not usually require much energy (although individual items such as motor-boating and the like should not be overlooked).

The most time-consuming activities, watching television and reading, are the least energy-intensive of the recreational activities considered (see also Paauw & Perrels, 1993). Per year and per person, both television and reading require less than 3000 MJ of energy (which is equivalent to the energy expended in 250 days of “slave-labour”). Much less time is used for tourist trips and for recreational driving. Both require, on an average, about 650 “slave-days” (about 6800 MJ) of energy per consumer per year.

The materials intensity of recreational activities is much more difficult to calculate. At present, we can provide only some isolated examples. The sixty kilos of newspapers and books consumed per person per year require about 540 kilos of primary materials (using data from Liedtke, 1993). The production of the average car – from the mines to the consumer – is estimated to require about 22 tons of materials (Knisch, 1991). As the average service life for cars is 13 years in Finland, this amounts to 1 700 kilos of primary materials per year. Of this, about one-third, i.e., 600 kilos per year, can be allocated to recreational car use (based on Nurmela, 1990).

From this perspective, leisure and information-related activities are not very post-industrial. Even things such as spectator sports events, which are not physical products, require products including cars, roads, and buildings, and they certainly require a considerable amount of fuel for reaching them. And even half of the long-distance aeroplane trips per year would eat up 6 per cent of the yearly energy budget, if such a budget were to exist.

The energy intensity of recreational activities varies greatly, more so than for other consumption categories. If we leave out walking, talking, thinking, singing, and meditating, which require little if any external energy, there is still great scope for variance in energy intensity (Table 1). For outdoor events, travel by car to and from the event often makes up a large part of the energy requirements. For a game of golf, travel is estimated to make up two thirds of the total energy requirement, while establishing and maintaining the facilities and equipment make up the rest. About the same holds for attending a game of professional ice-hockey (Mäntylä, 1995).

The more sedentary activities, such as reading a library book (we

Table 1. Energy intensity of selected leisure activities (Paauw & Perrels, 1993; Mäntylä et al., 1995)

Recreational activity	Energy MJ/activity	Equivalent number of "slaves-days"/activity
Playing a game of golf	216	21
Attending a hockey game	156	15
Reading a library book	0.5	0.05
A night at the theater	180	17
An evening of TV (3 hrs.)	2	0.2
A day at the races	220	21

assumed no car use for this) and watching TV, require much less energy. Reading a library book is the least energy-intensive activity, as each book is read about 100 times on average. Reading a newspaper or a single-use, individually purchased book is much more energy-intensive, requiring more energy than an evening of TV. This is due to the energy required to produce these swiftly consumed items (see Paauw & Perrels, 1993). All in all, we can see that the way consumers choose to use their spare time is very relevant from an environmental and resource conservation point of view.

However, when considering the services provided to consumers by recreational activities, i.e., the needs fulfilled, it is obvious that various activities cannot be interchanged, hour for hour. Usually, one is not prepared to substitute playing a game of golf with reading a library book on golf. Yet there seems to be much scope for reduced energy and material intensity. Reading a library book requires about one per cent of the energy required by buying each book one wants to read. Product life extension is one way to reduce the resource intensity per service. This may include a more intensive use of existing products through rental services, increased use of public transport, and a more intensive use of existing facilities (e.g., Stahel, 1992, 1996).

Telecommunications also provide some opportunities for reducing resource intensity of leisure consumption. For instance, much of the energy consumed by a day at the races derives from long-distance car trips by spectators. At least in Canada, electronic betting at hotels and restaurants with on-line screening of the event has been accepted by many consumers as a good second best (Mäntylä, 1995). Perhaps in the future, electronic newspapers will cut down some of the 23.5 MJ (more than 2 "slave-workdays" worth of energy) required to produce the average daily newspaper (Paauw & Perrels, 1993). But will the information super-highway do away with the urge to travel? And would wrapping Western consumers in a cocoon of virtual reality really save the planet?

Will consumers actually substitute one good with another, or will they want to have it all: the television on, the newspaper on the table, and electronic news pointlessly self-scanning as the consumer of all this information dozes on the couch? We should bear in mind the cautionary example of the "paperless office" so often predicted in the early 1980's, which never happened and actually turned out to be the opposite (Herman, Ardekani, & Ausubel, 1989). Obviously, service efficiency is not an easy concept. Even if products may be

called “service-producing machines,” consumers are certainly not easily re-programmable “service-consuming machines.”

IN SEARCH OF THE ELUSIVE “SERVICE”: IDEAS FROM EVOLUTIONARY THEORY

Beyond the “Service-Producing Machine”

Although the concept provides useful insights, it is evident that service efficiency in itself is not a panacea for sustainable consumption. It ties together the economic and physical sides of consumption, but does not address its socio-historical dimensions. The service-efficiency approach often over-emphasizes the functional aspects of consumption. Thus, for instance, Baccini and Brunner (1989, pp. 94–95), investigating the resource intensity of the activity “to clean,” declare: “The results . . . are amazing: in order to clean the human body from about 20 g of dirt per day, more than a 3000-fold amount of material (70 kg water/day) is used! With respect to the material flux, the French custom, reported from the 16th century, . . . covering the body with all kinds of exclusive powders . . . seems to have had certain advantages: the mass of cosmetics needed . . . amounted to about one third of the mass of dirt on the skin.”

This is where the expertise of consumer research is needed. Consumer research has been criticized for not focusing on the consumption process. Relatively little effort has been directed at the question “what do we do when we consume” (Holt, 1995; Wells, 1993). However, to be fair, there is an emerging body of research on exactly that question. The “new sociology of consumption” or the “meaning of consumption” research tradition provides us with a counter-balance for the excessively functional view presented by the economists and engineers working in materials balance economics.

One approach in the study on the meaning of consumption focuses on the personal meanings of consumption from a psychological perspective. This approach can be exemplified by the work of authors such as Csikszentmihalyi and Rochberg-Halton (1981) and Belk (1988). Belk (1988), for instance, has investigated the role of products in the construction and maintenance of the extended self, and considered the role of possessions at different developmental stages. Using a large body of variegated evidence, he demonstrated that products are

a means to “. . . learn, define and remind ourselves of who we are . . .” and later in life “. . . remind ourselves of experiences, accomplishments, and other people in our lives, and even create a sense of immortality after death” (p. 160). With a somewhat different focus, Holt (1995) has studied the *act of consumption*, using categories such as “consuming as experience,” “consuming as integration,” “consuming as play,” and “consuming as classification.” We learn that attending a game of baseball, for example, is much more than spending a few hours of time and forgetting about one’s everyday troubles. For experienced fans, baseball is a world in itself, involving interpretation, emotional appreciation, identity-enhancement, self-classification, and a social sharing of mutually felt experiences.

These perspectives provide us with a much richer picture of consumption than the simple concept of “service-producing machine.” The production of the service involves the consumer and his or her social relations, at least as much as it does the product itself. We learn that a game of baseball involves many different activities, provides many different kinds of services, and fulfills many different needs. We have set behind us the simple metaphor of a product as a service-producing machine. Or have we? Why are these activities linked to baseball, and not to something else? Where do consumption patterns come from and how do they evolve?

The problem is that goods are not merely service-producing machines. They are also needs-producing machines. They can sometimes even be epoch-making machines, like the automobile. In the following, we will outline an emerging perspective that elaborates these theses and tries to integrate them into the domain of consumer research (Pantzar, 1996).

An Evolutionary Approach to Consumption

Some useful approaches for studying the evolution of consumption patterns may be found in recent traditions in sociological technology research. These include the social construction of technological systems tradition (Bijker, Hughes, & Pinch, 1987), the theory of path-dependent historical processes (Arthur, 1989; David, 1989), and actor-network theory (Callon, 1987; Latour, 1991). They study the way in which different technologies and social systems are stabilized and institutionalized into identifiable closures, such as railroad systems,

national innovation systems, or electricity systems. In these processes, social and technological systems interact and integrate with each other (Latour, 1993).

Closely related perspectives have been presented within consumer research by authors such as Douglas and Isherwood (1978) and McCracken (1986), who consider the meaning of consumption from a cultural and institutional framework. McCracken (1986) considers goods as being vessels for the transmission of meaning. Meaning flows from the culturally constituted world, through the efforts of systems such as advertising and fashion, into consumer goods. Thus, emphasis is placed on the structural and dynamic properties of consumption. The common factor in socio-technology studies, the “new sociology of consumption,” and its more psychological variants (e.g., Csikszentmihalyi & Rochberg-Halton, 1981) is that they all chart the way “from uncontrolled chaos to ordered cosmos” (Kopytoff, 1986). On entering the life of consumers, new products are gradually institutionalized, cathectized, or ritualized, and they are no longer just implements, but part of our cultural and personal identity – and an inherent part of society.

Furthermore, inventions, such as the radio, the aeroplane, or the gasoline-driven automobile, are embedded within technological systems (e.g., Hughes, 1983, 1987, 1989). These systems are composed of physical artifacts, such as the turbogenerator, organizations, such as the investment bank, and people. They also include legislative artifacts (such as regulatory law), communication, and traffic. Technological systems are both socially constructed and society-shaping. Interactions between artifacts result in a “system goal”: “An artifact – either physical or non-physical – functioning as a component in a system interacts with other artifacts, all of which contribute directly or through other components to the common system goal” (Hughes, 1987, p. 51).

The process in which different products become embedded in larger totalities could be approached in terms of recent advances in general evolution theory and self-organizing systems (Csanyi, 1989; Pantzar, 1989, 1991, 1992a, 1992b). Self-organizing means that structures and patterns on the macro-level, such as the city or the department store, emerge out of the interactions of microscopic entities, such as goods and human beings. This occurs without outside intervention, i.e., without any specific intentions or plans. Products are not only simple responses to existing problems and needs. They also have

“transforming potential” (Gershuny, 1992). Thus, new commodities also carry the seeds of emerging challenges and problems. Everyday social and psychological processes such as routinization, socialization, learning, or habit-formation can be understood in evolutionary terms: Systems of goods and human beings have a tendency toward better and better reproductive quality (cf. Pantzar, 1993; Petrovski, 1993).

According to this view, existing systems of goods and human beings are cyclic processes rather than stable entities. Technological and social systems exist only in and through their reproduction in micro-social interactions. These interactions are in turn limited and shaped by the intended and unintended consequences of previous social actions. As the integration of artifacts and human beings proceeds toward larger entities, the constituent components relinquish their relative autonomy to the networks which they themselves make up. Usually systems are open to radical re-orientation only in their early stages. With time, systems of goods tend toward better and better reproductive quality and decreasing variation (Pantzar, 1993). This tendency has been documented in the life cycles of products and industries by Tushman & Romanelli (1985), in social habits by, e.g., Löfgren (1990), and in “biographies of things” by Kopytoff (1986).

New Commodities and the Evolution of Consumption Patterns

New commodities are rarely responses to basic human needs. This can be observed in empirical work on the evolution of artifacts (e.g., Basalla, 1988; Pantzar, 1996; Petrovski, 1993). “The artifacts that constitute the made world are not a series of narrow solutions to problems generated in satisfying basic needs but are material manifestations of the various ways men and women throughout time have chosen to define and pursue existence” (Basalla, 1988, p. 14). New commodities may simply replace older products, as margarine replaced butter in modern households. They may even enter the life of consumers as objects with no practical function. This applies to, say, the first automobiles at the end of the nineteenth century, or the first refrigerators in the beginning of this century (Basalla, 1988; Cowan, 1983). Similarly, in the beginning of their diffusion, the potato, Coca Cola, sugar, and coffee were mainly used as medicines. Needs arise and transform in use.

Ambler (1991), on the basis of archeological evidence, points out that as opposed to physical evolution, which is largely *substitutive*,

most cultural evolution has been *incorporative*, recognizable in the new layers of technology being added to already existing systems of artifacts: “Sticks are still used for cooking meat in the Homo Erectus manner despite the presence of the microwave oven” (Ambler, 1991, p. 231).

In nature, mutations are the source of newness. In the human context, mutations of behavioural practices take place both consciously and accidentally. Often, for instance, a new food item may enter our life by accident. Such an accidental event may have permanent consequences for our consumption patterns: Occasionally it gives birth to a kind of self-copying process of eating patterns, i.e., to a reproductive mechanism.

After the conditions for a reproductive system emerge, additional reproductive cycles appear, which are linked to the system precursors. As a result, components related to food events become organized into larger totalities. For example, new food items become linked with certain wines and music at festive dinners. Gradually, the fidelity of reproduction increases. This process could be called stabilization or closure formation. In the very beginning, the reproductive fidelity in food events related to a new item is low, and the copying process works imperfectly. New food items and configurations of these items are different in shape and they are linked to different kinds of social situations. In the final phase, these variations have almost disappeared (Pantzar, 1989). New items are no longer an exciting exile from everyday life. Rather, they become part of the daily routine. The actor’s (e.g., the cook’s) subject does not play any role, nor is any conscious attention given to the preparation or to the atmosphere of consuming such established items. This corresponds with the conventional view of everyday life as consisting of self-evident routines.

For an individual consumer, there must be some positive connection between a consumer’s first exposure to a new consumption item and his or her later contact with it. Resources must exist that make this possible. For instance, in the 1960’s, an “accidental” exposure to pizza occurred for many Finnish tourists in Italy. For some consumers, this exposure gave rise to processes that produced a more enduring, second stage preference (e.g., from accident to habit). This two-staged process, exposure-liking, gives rise to a reproductive cycle, and thus to the continuity of the new item’s role in an individual’s life. The exposure-liking process is one cycle that leads to stable patterns

of consumption. Another psychological cycle with similar effects is the pleasure-comfort cycle. Scitovsky (1976) has maintained that choices produce pleasure in the first stage, but that in time the pleasure fades away, and comfort becomes the main motivator for consumption. Comfort, however, is like addiction: We become accustomed to it and soon take it for granted. Thus, once made choices replicate themselves.

The fact that the position of a single artifact in an individual's or family's daily life (or in production processes, for that matter) stabilizes in time is dictated by the pressures of other activities, artifacts, and psychological factors. The diffusion of media technology provides one example of this perspective and of the research challenge it presents to sustainable consumption (for more examples, see Heiskanen & Pantzar, 1993; Pantzar, 1989, 1991, 1993).

The Diffusion of Media Technology: Changing Motivations and Social Context

The diffusion of the technology of popular culture is a good example of how new commodities enter the life of consumers as objects with no practical function and of how needs transform in use. Levinson's account of the history of media technology depicts a metamorphosis: from toy, through mirror, and towards art.

In the first stage (TOY), the fascination of (or service provided by) novel commodities is their novelty as such. New media technologies first gained admittance into society as "Trojan horses, with their physical presence clearly visible, but their potentialities poorly understood" (Levinson, 1977, p. 154). In the beginning it was only the media that were the message, and technologies, like the telephone, television, and radio were playthings "of free will." Löfgren (1990) has called the early period a period of "happy experimentation and a multitude of utopian schemes": "People remember the solemn atmosphere and the intense concentration in early radio, or the ways in which you dressed up for a television evening, hushing both grandma and the kids" (p. 15).

In time, however, playthings are transformed into practical technologies. At this stage one can speak of emerging "functional needs." Technological media attained its second phase when media technology captured the role of MIRROR. For instance, "the adoption of reality as film content distracted from the technology and artificiality of the

film experience, directing attention to the non-technological content – the events depicted on the screen – and in turn enhancing the believability of the content, i.e., that the events on the film were ‘really’ happening” (Levinson, 1977, p. 156). In the social context, the media became routine and people learned how to “listen with half an ear or having the television on as a background screen for conversation” (Löfgren, 1990, p. 15).

In the third phase, mass media technology moved from retelling reality to refashioning reality as ART does (Levinson, 1977). To achieve the “artistic” jump, a medium must have the capacity not only to replicate reality, but to rearrange it in an imaginative way. The development of technological art seems to depend on the special capacity of a technology, first designed as a toy and second used as a reality-substitute, to transcend reality and make new ones.

From Consumption for Its Own Sake to Self-Reflective Consumption

More generally, it can be observed that transformations in the changing determinants of consumer behaviour in the case of new innovations are easier to understand when the perspective is shifted from single commodities and needs to systems of commodities. The metamorphoses of goods from “toys” to “instruments” (Levinson, 1977), from “luxuries” to “necessities” (Douglas & Isherwood, 1978), from “pleasure” to “comfort” (Scitovsky, 1976), or from “sensation” to “routine” (Löfgren, 1990) are related to the organizing processes of systems of commodities. Levinson’s framework can be extended to the shifting historical relationship between man and quite a number of different commodities: e.g., the bicycle, the automobile, the radio, the television, and the home computer (for details, see Pantzar, 1996). This process can be envisaged in terms of *three stages*: consumption for its own sake, consumption for the instrumental value given by the commodity, and consumption as art and as self-reflexive and enlightened consumption.

Stage 1. Consumption for its own sake. “The commodity was its own message” – this might well describe man’s relationship with many early technologies (Basalla, 1988). For instance, people watched, listened to, and enjoyed television as a collective experience – even if the set broke down, people were content just to smell the burnt

cables. The product itself and the experience it offered were of paramount importance.

Stage 2. Consumption for the instrumental value of the commodity, "the science of consumption." Gradually, however, consumers began to raise their expectations toward the new commodity (e.g., the sound quality) and, at the same time, the product itself began to make claims on its environment, e.g., radio and television began to dictate people's daily schedules.

Stage 3. Art of consumption, critical, self-reflective consumption. Hopefully, over time, the consumer's relationship with commodities becomes increasingly critical and discriminating. The consumer gains the ability to analyse his or her own commodity-dependency and also to question more generally his or her materialistic lifestyle. On a collective level, however, this third stage has yet to arrive. Optimists would describe it as the era of the art of consumption. The extensive literature on postmodern lifestyles (e.g., Featherstone, 1991), might reflect the emerging theme of the self-reflective consumer.

When considering the conditions for a more sustainable system of goods, it is important to recognize that individual goods are embedded and integrated in larger systems. As routinization and "system goals" set in, it is increasingly difficult to change the individual consumption patterns, or the system as a whole. These difficulties are encountered both by the individual consumer, however willing to change his or her lifestyle, and by any external actor intent on environmental improvement.

A new critical theory of consumption is yet to arrive. This is a major challenge for consumer research. Economists seem to have no answer to why luxuries, in time, turn into necessities (Douglas & Isherwood, 1978). From the perspective of the theory of rational choice in which consumers are seen as optimizing agents, it is an unsolved anomaly to think that consumers are not only making decisions on the basis of given preferences, but also transforming those very preferences through their choices (Pantzar, 1986). Thus, the research agenda of sustainable consumption should not be limited to the economic theory of the consumer, but engage historical, sociological, and psychological consumer research as well.

HOW COULD CONSUMER RESEARCH CONTRIBUTE TO SUSTAINABLE CONSUMPTION?

Humankind has evolved to a turning point in its history. The decisions we make and the patterns that in the next decades will evolve from them will probably be decisive for countless generations to come. With a growing population and a rising standard of living, the carrying capacity of the earth will be soon be exceeded (Meadows et al., 1992). If current Western consumption patterns are replicated as such around the world, our environmental resources will swiftly be used up. And they certainly will be replicated, as evidence from Asian newly developed and Eastern European transitional economies demonstrates (Durning, 1994; Ryan & Flavin, 1995).

In order to avoid ecological, economic, and social catastrophes, we need to decrease the resource intensity of current consumption patterns by a factor of ten. This cannot be solved by engineering alone. Although industrialized economies have witnessed considerable gains in resource productivity (Jänicke et al., 1989), these gains are easily offset by an increase in the number and variety of products consumed (Heiskanen & Pantzar, 1993). However, the problems cannot be solved by only changing the way people think. If anything has been learned from consumer research on environmental issues, it is that a change in beliefs, attitudes, or values does not necessarily lead to lifestyle change.

Our article has attempted to point a new direction for consumer research on environmental issues. We started by reviewing the literature on environmentally relevant consumer studies. We found that existing research had brought up some interesting results, especially on the importance of structural, habitual and social factors on environment-related consumer behaviour. Yet, although some claim that the attitude-behaviour inconsistency has been solved on an analytical level by methodological alterations, it is obvious that it has not been solved on a practical level. Widespread lifestyle changes have not been witnessed in spite of considerable consumer concern on environmental issues.

We also observed that, up to now, consumer research has mostly concentrated on individual environmental issues, such as recycling or choice of greener goods as one particular aspect of consumer behaviour. Very little empirical research has been directed at consumption patterns in a broader sense. Discussing the impact of consumption as such

has been left to environmentalists, philosophers, and environmental economists. Their suggestions of a “new set of values” or “getting the prices right” are interesting, but not practicable in the short term.

We continued by presenting a new line of thinking in environmental policy, based on decades of research in materials balance economics. The starting point for such ideas is that the resource intensity of current consumption patterns has to be decreased drastically. Many advocates also maintain that this goal can be achieved in a socially acceptable manner. *Service efficiency* has been presented as a useful and interesting concept, and one that consumer research has much to contribute to.

However, if taken seriously, the concept of service efficiency requires quite a few qualifications. The “new sociology of consumption” has demonstrated that services provided by goods are not simply technical, but include a multitude of symbolic, psychological, and cultural services, both to the consumer and to society. Furthermore, the evolutionary framework that we presented implies an even more active role for goods. Goods and technologies form larger socio-technological networks and systems. In the course of this integration, the system acquires a self-reproducing quality. Besides simply satisfying needs and providing services, products also transform those needs and services. This is probably why innovations that are meant to be efficient, and to reduce the need for resources, often have the opposite effect. Computers did not lead to the paperless office, but to the use of even more paper. Household technology did not reduce the workload of homemakers, but led to “more work for mother” (Cowan, 1983).

From this perspective, the evolutionary dimension of consumption patterns deserves special emphasis. When product systems are established, any change in consumption, either on the level of consumer society or on the level of single household, is difficult. The inertia of routinized behavioural patterns is not only related to the subjective interpretations of consumers (“what we need”) but also to the objective requirements placed by networks of commodities (“what commodities need”). For instance, the need to use one’s own car is not only psychological and cultural, but also embedded in physical structures. When we proceed to explore the concept of service efficiency, it is useful to remember that products serve more than one master.

The problem of sustainable consumption is a hybrid problem that

calls for inputs from various disciplines and walks of life. We believe that consumer research has much to contribute. In the following, three major areas for cooperative research are suggested.

1. In connection with concepts such as resource intensity and carrying capacity, a view of the environmental relevance of consumption patterns as a whole is emerging (e.g., Durning, 1994; Schmidt-Bleek, 1994). It is very much an issue of consumption patterns, and very little one of brand choice or incremental consumer decisions. Relatedly, programmes for “dematerializing” consumption have been initiated. An important concept in this context is *service efficiency*. Attempts are made to assess and improve products, product systems, and consumption as a whole in relation to the services (defined as consumer welfare or utility) that they provide.

One example of such programmes is *Sustainability and Quality Lifestyles for the Year 2000* initiated by the Dutch Ministry of Environment. The proposed quality lifestyles involve changes in energy consumption, product use and disposal, eating preferences, and personal mobility. Key aspects of this programme include the provision of services that minimize the need for transportation and private ownership. Such services include “rent-a-car” programmes, restaurant services, telecommunications, and bulk deliveries of goods to consumers. The programme includes the assessment of how acceptable these changes are within the prevailing culture, and the planning of a social marketing and service provision programme (e.g., Matthews, 1995). Such developments imply that the role of consumer research in social marketing is expanding. In addition to persuasion issues, consumer research could contribute to the identification of crucial aspects of consumer behaviour and of the utility derived from the consumption of goods.

Concordantly, within environmental business management, concepts such as demand management (Schelleman, 1996) and strategic niche formation (Kemp, Schoot, & Hogma, 1996), are emerging. It is increasingly understood that sustainable production and consumption patterns require simultaneous efforts in the whole product chain (Cramer & Scot, 1996; Hass & Groenewegen, 1996). The emerging research agenda extends beyond the traditional domain of consumer research, but could benefit from the contributions and research methods of consumer research (see, e.g., Heiskanen et al., 1995; Timonen, Niva, Heiskanen, & Kärnä, 1997).

2. The discussion on service efficiency was initiated by econo-

mists and engineers. Their view of service often lacks depth, and concentrates on technical aspects of the service. The “new sociology” or “meaning of consumption” movement within consumer research could provide the necessary counterbalance to this excessively utilitarian view. Increasingly, consumer research is addressing issues such as materialism (Holt, 1995), modern hedonism (Campbell, 1994), “the dark side of consumer behavior” (Hirschman, 1991), and social dilemmas (Uusitalo, 1990), which could considerably contribute to a *new* critical theory of utility. The recent environmental debate, on its part, suffers from too little consideration of the socio-cultural aspects of consumption. No voluntary changes in consumption can be achieved if policy-makers, business, and consumers alike lack an understanding of how and why we consume.

Although we criticized it, the metaphor of the service-producing machine is not totally inappropriate. As long as we understand its limitations, it could turn out to be a very useful concept. One of the issues that should be addressed is *the nature of the services or utilities provided by products*. Here, phenomenological and psychological studies could be invaluable. If consumption is really about self-enhancement, social esteem, or other immaterial rewards, perhaps we could find a more efficient way of providing these services than the current continual flow of materials and energy.

3. Cultural and psychological studies of consumption could, for the sake of sustainability, pay more attention to the evolution of consumption patterns. To understand more generally how new goods and systems of goods are incorporated, we need more historical information on the different ways in which commodities or patterns of consumption have been introduced, and have been institutionalized and expanded in our daily life. Mostly, cultural studies of consumption have concentrated on aspects of consumption such as fashion, advertising, prized possessions, and home decoration that are fairly voluntary and have high personal and symbolical significance.

There is a large part of consumption, including transport, food, home-heating, and the like, that is no less culturally determined, but much more tightly bound structurally. Contributions such as that of Olshavsky and Granbois (1979) demonstrate the limits of consumer decision-making: “Purchases can occur out of necessity; they can be derived from culturally-mandated lifestyles or from interlocked purchases; they can reflect preferences acquired in early childhood; they can result from simple conformity to group norms or from

imitation of others; purchases can be made exclusively on recommendations from personal or nonpersonal sources; they can be made on the basis of surrogates of various types, or they can even occur on a random or superficial basis” (Olshavsky & Granbois, 1979, p. 98).

Prior decisions – made by society and by the individual consumer – place unforeseeable constraints on consumer decision-making (Best, 1982). Once an investment or consumption decision has been made, we become a hostage to the past. For instance, once the car has become the dominant mode of transport, then housing, family, work, shopping, and recreation patterns are designed around it. Recent advances in actor-network theory and evolutionary economics are addressing the co-evolution of culture and technology, which are the two major forces that bear upon the issue of sustainable consumption. Consumer research for sustainability would do well to participate in this project by re-investigating the limits of consumer choice and reviving discussions such as that presented by Olshavsky and Granbois (1979). What choices do we actually have? What constraints do consumers bring upon themselves by consumption decisions?

Looking at the evolution of consumption patterns, we find that goods and technologies are not only vessels of cultural meaning. While they are shaped by culture, they also shape it themselves. They have *transforming potential*. As yet, we know very little of where this transformation is leading. We never got the “paperless office” that computer enthusiasts forecasted; how many current forecasts are as wildly wrong? In the case of the “paperless office,” the users of computer technology obviously influenced the outcome. Technology studies are recognizing that consumers have an important role in shaping the uses of products and technologies. The “paperless office” and other forecast flops inspired Herman et al. (1989), scientists within the materials balance tradition, to call for “materialization impact analyses” in order to understand how new goods affect the consumption of other goods. Here too, consumer research could certainly contribute to the theory and practice of sustainable consumption.

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ZUSAMMENFASSUNG

Auf dem Weg zur Nachhaltigkeit des Konsums: zwei neue Perspektiven. Der Artikel versteht sich als integrativer und theoretischer Beitrag zum Problem des nachhaltigen Konsums. Er will Einsichten aus zwei konzeptionellen Bezugsrahmen für die Möglichkeiten und Grenzen der Nachhaltigkeit des Konsums vermitteln. Zunächst wird ein Überblick über die bisherige Verbraucherforschung zur Umweltproblematik geboten. Er führt zu dem Ergebnis, daß diese Forschungsrichtung sich bisher nicht den eigentlich zentralen Fragen des Themas zugewendet hat und daß für diese Fragen ein transdisziplinärer Ansatz erforderlich ist. Die beiden neuartigen Bezugsrahmen entstammen der Ökonomik der Stoffströme und der entwicklungstheoretischen Betrachtung von Konsummustern und werden auf den Konsum im Bereich des persönlichen Freizeit- und Erholungsverhaltens angewendet. Der Beitrag zeigt abschließend drei Bereiche auf, in denen die Verbraucherforschung zur Ausfüllung der beiden Bezugsrahmen beitragen könnte, um dadurch die Theorie und Praxis der Nachhaltigkeit des Verbrauchs voranzubringen.

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This article is based on ongoing research in the research programme Conditions for a Sustainable Product Culture at the National Consumer Research Centre.