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Nelson, Richard and Consoli, Davide

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# **An Evolutionary Theory of Household Consumption Behavior**

**Richard R. Nelson**

*Columbia University, New York, USA*

**Davide Consoli\***

*University of Manchester, Manchester, UK*

**Abstract.** *Evolutionary economics badly needs a behavioral theory of household consumption behavior, but to date only limited progress has been made on that front. Partly because Schumpeter's own writings were focused there, and partly because this has been the focus of most of the more recent empirical work on technological change, modern evolutionary economists have focused on the "supply side". However, because a significant portion of the innovation going on in capitalist countries has been in the form of new consumer goods and services, it should be obvious that dealing coherently with the Schumpeterian agenda requires a theory which treats in a realistic way how consumers respond to new goods and services. The purpose of this essay is to map out a broad alternative to the neoclassical theory of consumer behavior.*

## **1. Introduction**

Many contemporary economists who consider themselves evolutionary theorists have in mind a narrower and a broader goal. The narrower goal is to meet what we will call “Schumpeter’s challenge”, which is to create a theoretical framework capable of analyzing innovation driven economic growth. While it might be suggested that this narrow goal is rather broad, the still broader goal is no less than the replacement of neoclassical theory with a theoretical alternative, that deals not only with subject matter like innovation that neoclassical theory does not address, but with much of what neoclassical theory does address, but on the basis of sounder behavioral assumptions.

\* Corresponding author: [davide.consoli@mbs.ac.uk](mailto:davide.consoli@mbs.ac.uk)

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Particularly in this broader endeavor, we evolutionary economists have had a lot of company.

While considerable progress has been made towards both of these goals, to date virtually all of the work by evolutionary economists has been focused on the “supply side” of economic activity, the demand side has been relatively neglected. The purpose of this paper is to provide at least the outlines of a theory of consumer behavior that we believe has promise of helping us to approach more closely both of the goals we mentioned above.

A very large share of the research and writing in evolutionary economics continues to be oriented towards dealing with what we above called “Schumpeter’s challenge”. In both his *Theory of Economic Development* (1934) and his *Capitalism Socialism and Democracy* (1942) Schumpeter put forth the argument, which modern evolutionary economists have found compelling, that capitalist economies need to be understood as always in motion, always generating and reacting to innovation of various sorts, but that the basic structure of neoclassical theory completely repressed this, in effect assuming an economic world that was free of innovation. Over the last forty years a strong tradition of empirical research on innovation and technological change has provided a wealth of knowledge about these processes. Much of the research and writing by evolutionary economists has been oriented to trying to develop a theoretical structure useful for understanding an economy where, as Schumpeter proposed, innovation driven change is the rule rather than the exception, and which squares with and illuminates what we have come to know empirically about the relevant subject matter (Nelson and Winter, 1982; Dosi et al, 1984; Freeman and Soete, 1997; Rosenberg, 1982).

This has been and continues to be a tough challenge. However, considerable progress has been and continues to be made in dealing with it, at least regarding analysis of the dynamics of the supply side of economic activity.

But, as we have noted, for many evolutionary economists such an achievement would be only the first step. They share not only an interest in building a theory that deals with economic dynamics better than does neoclassical theory. They also share a set of beliefs in how to characterize and understand human behavior, and the behavior of human organizations, that leads them to reject neoclassical theory not only as a framework inadequate for understanding economic dynamics, but more generally as a deeply flawed theory of economic behavior in any context, even behavior in contexts that are relatively static. The long run goal is to develop a complete theoretical alternative to neoclassical theory.

Thus in addition to Schumpeter, the writings of Herbert Simon and his colleagues at (then) Carnegie Tech (Simon, 1955; 1959; March and Simon, 1958; Cyert and March, 1963) had an important founding influence on evolutionary economists and kindred scholars. In recent years this perspective on economic behavior has been augmented and modified by a wide range of empirically oriented work on human cognition and behavior and on how organizations work. Much of this research has been done by scholars outside of economics (see e.g. Tversky and Kahneman, 1974, Posner, 1990; Clark, 1997), but increasingly economists have joined in. The field of “behavioral economics” is thriving (see recent reviews by Camerer and Lowenstein, 2004; DellaVigna, 2009; Rabin, 1998) as is the “new institutional economics”. Economists in business schools, for example Teece (2009), have been an important source of writing on firm behavior and capabilities.

Without denying considerable differences among the scholars involved, we will call these proposals for reform “behavioral”, in that they all are oriented towards bringing the theoretical assumptions of economic theory closer in line with what is known about the processes that actually generate individual and organizational action taking. The analysis in most of the evolutionary writings on Schumpeterian topics rest heavily on the propositions about behavior put forth by these scholars. Their relevance, however, obviously extends beyond subject matter where innovation is a central aspect of what is going on, to analysis of economic activity in general.

Evolutionary economics badly needs a behavioral theory of household consumption behavior, but to date only limited progress has been made on that front.

Partly because Schumpeter’s own writings were focused there, and partly because this has been the focus of most of the more recent empirical work on technological change, the lion’s share of the writing by modern evolutionary economists concerned with economic dynamics has been focused on the “supply side” of economic behavior: the behavior of firms, the nature of innovation and technological progress, industrial competition and dynamics. However, because a significant portion of the innovation going on in capitalist countries has been in the form of new consumer goods and services, it should be obvious that dealing coherently with the Schumpeterian agenda requires a theory of consumer behavior which treats in a realistic way how consumers respond to new goods and services. Presently we do not have such a theory.

As evolutionary economists of a Schumpeterian bent we think it is specially important that a theory of consumer behavior be able to deal with the fact of continuing changes in the goods and services available to consumers. However, we do not think it makes sense

to have a separate theory to deal with contexts in which change is rapid, and another to deal with contexts in which change is slower or more episodic. Therefore, it is important that our theory of consumer behavior be able to explain and illuminate the kind of phenomena that neoclassical theory does address, and purports to predict and explain, like the responses of consumers to price changes of familiar goods and services, but on the basis of assumptions that better fit the facts. While the “parameters” of the theory clearly should vary depending on the amount of uncertainty and flux that marks a context, our objective is a theory with a unified structure.

Our purpose in this essay is to map out a broad alternative to the neoclassical theory of consumer behavior, that is capable of dealing with economic dynamics, but also treats consumer behavior in contexts where the Schumpeterian criticism of neo classical theory is not of compelling importance, for example where the goods and services that are available are relatively constant, but where the behavioral assumptions of neoclassical consumer theory still seem grossly inconsistent with what is known.

In particular, reflecting the influence of the Carnegie School, we evolutionary economists are committed to a theory of behavior in which rationality is bounded. The assumption of bounded rationality obviously is appropriate to contexts where humans and organizations have had no prior experience, but it also is warranted in contexts where they have had a lot, although their behavior and performance may be more predictable in the latter. In the case of consumer decisions to purchase certain goods and services and not others, rationality is bounded not simply by the fact that potential purchasers generally possess less knowledge about alternatives, and prices too, than is assumed in standard theory. They clearly do not go through the kind of informed calculations implicitly assumed by

standard theory. Nor, in view of their limited understanding of alternatives, and the fact that even in contexts that are familiar to them consumers sometimes are dissatisfied with what they have bought, can a good theory be based on the assumption that they behave “as if” they did.

Ignorance of alternatives aside, the evidence is clear that individuals do not have the kind of stable global preference orderings over different kinds and degrees of want satisfaction assumed by standard theory. Rather, preferences often are weakly established, under the influence of a variety of factors implicitly assumed away in standard theory, in particular strongly influenced by consumption experience, and hence path dependent, and potentially unstable. Under these conditions, it is not clear even how to define fully rational behavior.

On the other hand, while we evolutionary economists are inclined, and appropriately so, to see the behavior of economic actors, including household consumption behavior, as in good part a matter of the exercise of routine or habit, clearly there is conscious thinking, perhaps even some systematic research done, regarding some purchase decisions. One can observe this regarding big ticket items like what kind of car to buy or where to go on a vacation, but there also often is some thinking and discussion about what to have for dinner tonight. The processes by which a household becomes aware of a new consumer good, and considers whether or not it is worth trying, clearly involve attempts to make sense of perceptions that the context for action has changed. It is important not to banish all rationality, or attempts at it, from a theory of consumer behavior.

In our efforts to develop an evolutionary behavioral alternative to the neoclassical theory of consumer behavior, we certainly do not start from scratch. We are able to build from

the work of a number of economists who have been exploring the inadequacies of neoclassical theory and trying to construct an alternative. Some of our intellectual companions share the evolutionary economists particular concerns with economic dynamics. Others do not have that focus, but simply want to build consumer theory on a more adequate behavioral basis.

Thus many of our discomforts with neoclassical consumption theory have been well expressed by Witt (2005). In our theory development we have found it extremely useful to work with the idea that individuals and households have a set of distinguishable wants that they aim to satisfy through the purchase and use of certain goods and services, an idea developed extensively by Ironmonger (1972), as well as the proposition developed by Lancaster (1966) that there are alternative activities that can be used to meet wants. The idea that perceptions regarding how best to meet wants, and regarding what wants are most important to meet, are largely the result of experience, and hence that preferences are to some extent endogenous and path dependent has been developed by several modern “Austrian” economists, and in particular O’Driscoll and Rizzo (1985). Teubal (1979) and Swann (1999) have stressed the importance of consumer learning. A recent volume edited by Bianchi (1998) develops the idea of the “active consumer” more generally, and contains relevant chapters by Bianchi herself, Loasby, Langlois and Cosgel, and Earl. Von Hippel (1986) has been developing and documenting the argument that consumers, more generally users of goods and services, often are innovators. Veblen (1899), Duesenberry (1949), Aversi et al (1998), and Witt (2001) have stressed the social and cultural nature of wants, as of course have many modern anthropologists and



sociologists. Metcalfe (2001) and Consoli (2008) have taken steps towards developing a broad evolutionary theory of consumer behavior.

However we think it fair to say that most of these writings have been concerned with a limited set of facets of consumer behavior, and have not provided a broad alternative to neoclassical consumer theory. Our objective in this paper is to develop one.

We proceed as follows. In the next section we present a broad theory of household consumption behavior that we believe is at least a start on what we evolutionary theorists need. Then, from the perspective provided by that theory, we focus on household responses to changing prices, rising incomes, and the availability of new goods and services. The description of our theory in this paper will be rigorous, but not formal, articulated verbally, rather than mathematically. We think this is the appropriate level of abstraction for the presentation of the broad, and multi-purpose, point of view we are espousing here. In other papers we will present various formal models dealing with more constrained phenomena, and employing more powerful and abstract analytic machinery.

## **2. The General Formulation**

We propose that the following general theoretical formulation, while not yet fully fleshed out, has the promise of bringing many aspects of consumer behavior within the compass of a behavioral and evolutionary economic theory.

Regarding the objectives and satisfactions sought by households in their purchase of goods and services, as we have noted a number of empirical studies indicate strongly that the idea that households have a well defined coherent general utility function can not hold water. In its place we assume that a household has a set of particular wants it attends and

that the goods and services it purchases are intended for use in meeting those wants. (Ironmonger, 1972). We also assume that households can judge at least roughly whether particular wants are being met, or if want satisfaction is a matter of degree, to assess with some consistency whether a particular want is being met better or less well in one situation as compared with another. In contrast, we propose that, while not strictly random, once basic levels of want satisfaction are met, households can have difficulty in judging whether they are better or worse off when one want is met better and another less well than in an earlier situation, and their evaluations of this can be inconsistent (Marschak, 1950; Ellsberg, 1961; Lichtenstein and Slovic, 1971).

This formulation obviously departs from the view in standard neoclassical economics that sees households as having stable well defined utility functions and acting as “utility maximizers”. On the other hand, the formulation is consistent with the view of households as trying to meet their perceived needs and wants as well as they can, given what they know or believe. although households are seen as more confident and consistent about how to meet particular wants better or worse than they are about the tradeoffs involved in meeting different wants to different degrees.

The formulation implicitly raises two questions. What determines the wants that households attend and try to satisfy? And where do beliefs about how to meet various wants come from? Obviously some wants are pretty basic and biological. But even in primitive societies, the range of wants that are attended goes far beyond anything that is closely linked to biological needs. And the customary ways of meeting different wants, even basic wants, differ greatly across societies. It is clear that both the wants that households attend, and the standard means of meeting them, are strongly shaped by the

culture surrounding a household, and within which its members grow up. But it also is clear that there are significant differences across households within a given society in the wants attended and how they are satisfied reflecting variation in particular experiences, circumstances, and other idiosyncratic elements.

As observed by several other scholars (Maslow, 1943; Langlois and Cosgel, 1998), attended wants have a loose hierarchical structure in at least two different senses. First, there are certain basic wants that must be met, at least to a certain degree, before other wants can begin to be attended. Second, wants are matters that can be defined broadly, as adequate nutrition, or more narrowly as having a healthy dinner, and activities to meet wants can be conceptualized as correspondingly broad or narrow – having overall a balanced diet, versus having chicken and peas tonight. Our treatment of this will be pragmatic, tailored to the particular questions being explored.

We follow the proposal by Lancaster (1966) in assuming that households engage in various activities to meet the wants they attend. Within a particular culture there tends to be a widely recognized set of ways for meeting particular wants, but also usually a certain range of options. Given the ways of meeting wants employed by a household, purchased goods and services yield utility as inputs to those activities, as contrasted with entering the utility function directly. In some cases an activity may be largely defined by a particular input, as taking aspirin to cope with a headache. In other cases an activity can involve a number of inputs and actions (for example preparing a dinner, or getting the children to school). In either case, we propose that the concept that particular wants are satisfied through activities aimed at that objective, which may employ purchased inputs,

has the significant advantage of focusing attention on how purchased consumer goods are used to meet wants.

Paying attention to the way wants are met leads one to recognize that in many cases knowledge about the various ways a want can be met is not a trivial form of knowledge, and may take time and experience to acquire. While broad knowledge of means to meet various ends may be in the culture, the knowledge, or belief, of a particular household about what particular means are effective can be strongly conditioned by experience. Also, the effective employment of an activity often requires a certain amount of skill, which may require experience to develop. Since attitudes regarding what wants are worthwhile pursuing are strongly influenced by experience in trying to meet those wants, in a real sense priorities and expectations regarding meeting different wants, beliefs about how to meet wants effectively, and household competences, evolve together (Metcalf, 2001, Consoli, 2008). As a result, it may be difficult to disentangle a want that a household aims to meet from preferences and beliefs about the desirability of particular ways of meeting that want.

We note that this co-evolutionary process inevitably will have some important random elements. While many of the wants targeted by households may have objective needs in the background, as needs for adequate nutrition, feedback regarding the efficacy of what the household is doing to meet those needs, for example the nutritional value of the breakfasts it customarily has, may be weak. Within certain broad limits a household's practices may be mostly a matter of particular tastes and beliefs. What the family has for breakfast may be largely the result of the fact that waffles were once served while they were visiting a friend's house, and they liked them. And wants themselves may be

strongly influenced by chance events. That their friends introduced them to skiing may have engendered a lifetime desire to go skiing at least once every winter.

We do not want to draw tight analogies between the theory of household consumption we are developing and the theory of the firm that has become a staple in evolutionary economics. However, the propositions that households at any time possess certain competences and not others, and that their actions are guided by broad strategies that may or may not be appropriate to the situation they are in, in our view are as appropriate for a theory of household behavior, as their analogues are for a theory of the firm (See Dosi, Nelson, and Winter, 2000, for a broad and detailed discussion of firm capabilities). The argument that firms inevitably differ, and that those differences matter (Nelson, 1991), also has its counterpart in the theory of consumer behavior we are developing here.

An apparent difference between a theory of the firm suitable for evolutionary economics and a theory of household consumption behavior is that the former needs to incorporate capabilities for innovation in a central way, while it is less obvious that consumer innovation is a relevant concept. However, it should be recognized that consumers are challenged to innovate, in the sense of changing perhaps significantly what they do, by the appearance of new products. Further, as Bianchi (1998) and colleagues have argued convincingly, consumers in many cases seem to relish trying new things.

Household consumption behavior obviously operates under a set of constraints. Putting cultural bounding and the limits and requirements set by individual household idiosyncrasies aside for a moment, household purchases of the goods and services used in their activities to meet wants are limited by two other kinds of constraints. One is the budget constraint of standard consumer theory. At any time that constraint can be rather

flexible, since households can dip into savings, buy on credit, or borrow more generally. However, over the long run those with high average incomes and wealth can buy more than those with low average incomes and little wealth to draw on. And the lower the prices of the goods bought by a household, the farther the budget constraint can stretch.

It is important to note, however, that the theory of household consumption behavior that we have been articulating suggests strongly that households can differ significantly in their ability to spend their money effectively. Some households learn that certain needs can be met quite economically, if they go about meeting them in certain ways. Other households may spend much more than they need to spend in order to meet a need. Many years ago Wesley Mitchell, in his famous article “The Backward Art of Spending Money” (1912) despaired that many households had little idea as to how to use their budget effectively.

The second constraint stems from the fact that household consumption activities take time (Becker, 1962; Linder, 1970; Metcalfe, 2001; Steedman, 2001). Some of them, like taking a vacation take considerable time. Again, there is a certain flexibility to this constraint, or at least how it limits the range of household activities that can be managed. More or less time can be spent sleeping or earning income. People can be hired to perform a variety of services. Thus the time constraint and the income constraint are not independent. However, a serious constraint for many households contemplating things they would like to do and can afford financially is lack of time to do them.

We note that the time constraint, which assumes a limit on the range of things a household can do at any time, together with the fact that some of the goods a household possesses (for example an automobile) are required inputs in several of its customary

activities but cannot be used in all of them at the same time, means that household consumption, want satisfaction in general, involves activities that need to be coordinated. Ability to coordinate household activities effectively, or more generally to use time efficiently, is one of the more important skills a household can possess, and as is obvious many possess it to only a limited degree.

Based on the broad theory we have articulated above, in other papers we will develop and work through several formal models concerned with particular phenomena of interest. However, even without explicit formal modeling, the theory provides insights into the nature of household responses to a number of variables and conditions, responses that long have been matters of central interest to economists. To develop and sharpen these insights, in the remainder of this paper, while preserving the verbal presentation, we will tighten up the above specification in several ways.

While there surely is a continuum, we will make a distinction between circumstances where the purchases of goods and services are largely a matter of routine, involving little in the way of self-conscious selection, and circumstances which require the household to dedicate a certain amount of thought, and effort, to deciding what to do. In the analysis that follows the examples of the latter that we will mostly invoke are situations where the household is contemplating changing significantly the way it does certain things, changes that would involve employing activities that are new to it. Such contemplation may be invoked by significantly changed household circumstances, for example the birth of a first child, or a large increase in real income. Conscious decision making also obviously is involved in the choice of big ticket items like an automobile, or occasions where the household or members of it put considerable stake in the quality of the choice, like

vacation decisions. And for evolutionary economists, the processes through which consumers recognize and react to the emergence of new consumer products and services are of particular importance.

We make three non trivial assumptions regarding the activities a household uses at any time to meet its wants. The first is that particular activities are specialized to particular wants. This assumption does not imply that particular consumer goods can be used to meet only one want – some might be used in several activities – but rather that the activities are specialized. The second is that at any time a household employs a small number of activities to meet any particular want they attend. The employment of more than one activity to meet a broad want permits some variety. The same dinner every evening can be boring. On any Saturday a household may contemplate going to a movie, a play, or a concert. However, for the reasons we argued earlier, a household tends to commit to a limited pattern of variation. And while some conscious choosing may be involved, we will treat variation in the activities customarily used to meet a want as largely a matter of routine.

Third, once a collection of activities to meet a particular want is established by a household, and a routine of variation within that set, we assume change in the balance of variation within that collection is much easier for it to effect, or even contemplate, than adding new and unfamiliar activities. The latter requires that the household contemplate doing things a new way, and this we assume requires more conscious pondering than simply doing a little more of this and a bit less of that.

Activities are defined in terms of their basic action patterns, and the inputs they employ.

In some but not all of the following discussion we will assume that activities can be



employed at various levels. Under this specification, the greater the level of use of an activity, the greater the degree of fulfillment of the want it services, and the more the inputs it employs. Generally we will assume that inputs are used in fixed proportions, and those proportions are invariant to the level of use of the activity. At any time the mix of inputs used by the household to meet a want will depend on which activity it is using to meet that want. Over a finite period of time, the mix of inputs used and purchased will be determined by the relative use of different activities.

As evolutionary economic theorists we recognize that household consumption behavior never is completely static. The circumstances influencing consumption behavior always include some new elements. Children get older, and adults too. Accidents and illnesses occur. Old friends move and new ones are made. Ideas are generated for new things to do. These kinds of changes always are going on, even if income and prices are constant. However, we think the concept of a household consumption equilibrium is a useful one as a benchmark for analysis of household responses to changed conditions and perceptions, and we define such a concept below.

A household consumption equilibrium involves, first of all, a set of wants it is attending and a want satisfaction target for each. Second, a collection of activities and activity levels it is using to meet each want, and a customary balance among the several. Third, purchases of inputs associated with those activities and their differential employment. In an equilibrium, the mix of activities and their levels, and how the household organizes its activities, just meets want satisfaction targets, and the purchases of inputs fits within the household's budget and time constraints with little slack. And of particular importance, the household has no tendency to change this package of things, in the absence of

changed circumstances, or changes in the things it knows or believes. Note that this kind of an equilibrium has no claim to being an optimum, except in the sense above.

### **3. Household Responses to Changed Conditions and Perceptions**

In this section we consider, from the perspective provided by the theory just developed, how households are likely to respond to changed conditions and perceptions. We consider, first, a change in the relative prices of the goods and services with which they are familiar and purchase regularly, second, changes in their purchasing power or real income, and third, the introduction of new consumer goods and services. For the reasons discussed earlier, we will distinguish between responses that involve only a change in the mix of activities used by a household and those that involve the adoption of new activities for meeting wants. And regarding the latter, we will distinguish between activities that are new to the household that meet wants they had been attending, from those that are associated with the attendance of new wants. The latter, we have argued, often is associated with consumer response to new goods and services.

#### **3.1 Demand Curves**

One of the arguments long espoused by economists of an evolutionary persuasion is that virtually all of the predictions that seem to fit the facts that come out of contemporary neoclassical theory come out as well, and more plausibly, under a suitably constructed behavioral evolutionary economic theory. The sensitivity of household purchases of goods and services to their prices is a good example. The prediction that in general a rise in the price of a good will induce reductions in the amount of that good purchased, and a decline an increase, does not depend on assumptions about a global utility function and

maximization. One can make those predictions much more plausibly on the assumptions that, on the one hand, changes in budget constraints induce changes in household behavior that respect those changes<sup>1</sup>, and on the other hand, that households generally are aware that a particular want can be met in different ways and (at least from time to time) pay attention to the cost of meeting it.

The theory of household consumption behavior we have been developing suggests strongly that how the quantity of an item bought by a household tomorrow, or next week, responds to a change in the price of that item from what it has been is strongly dependent on household consumption behavior and prices today, or more generally what these have been. For the purposes of theoretical analysis it seems convenient to assume that households have been operating in what we have called a consumption equilibrium. In that equilibrium each household was attending a particular set of wants, and engaging in a set of activities and purchases that both met their targets regarding these wants, and were compatible with the budget and other constraints under which they operated, and prevailing prices. We defined this pattern of activities and purchases as an equilibrium if households were not inclined to change them unless circumstances, or what they believed about circumstances, changed.

A change in the price of a good from that prevailing in a prior household equilibrium will upset this order. There is no reason in the theory we have proposed to assume that a change in price is noted quickly; it may take some time, before households notice the price change, and the lag may be particularly long for households that are not already

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<sup>1</sup> Becker (1962) presents an argument that responses to a price change induced by a shift in the budget constraint are alone sufficient to induce downward sloping demand curves. The argument we present here involves a much richer characterization of the processes involved in the responses to changed prices

employing that good in their regular activities. But if that change is an increase in the price of a good a household is purchasing regularly, which is the case we will consider first, we propose that this will be noticed relatively soon, and several responses set in train.

For the reasons mentioned earlier – some money in the bank, ability to borrow, etc. – we do not treat the budget constraint as firmly binding. However, we do assume that households have amounts that they budget to spend meeting particular wants, and in total, that are viable in an equilibrium context, and keep at least rough track of the amount they are spending. Since an increase in the price of a good being purchased means that, under prevailing routines of purchase and use, expenses have gone up, there is pressure on the budget constraint. Total purchases need to be cut back. This will be signaled both by the rise in the particular price, once that is noticed, and by a running of expenses over budget. We propose that the expenditure cutting back response occurs relatively quickly and is concentrated, at least initially, on the activities that use the good whose price has increased. Later the response may spread to other activities.

Efforts at substitution also will be set in train. Under the theoretical framework we developed above, the conception that certain goods are substitutes becomes quite clear and concrete, indeed much more so than in the consumer theory of the economic textbooks. Goods are substitutes if they are inputs to different activities that can meet the same want (and complements if they are used in the same activity). Thus meat and fish are inputs in alternative dinner activities, and hence are substitutes in these roles. Under the theory of household consumption behavior we are proposing here, as under standard neoclassical theory, a rise in the price of meat will lead the household to have meat for

dinner less often, and possibly fish more often. The case that a noticed rise in the price of meat relative to fish will lead many households to have more dinners with fish and fewer with meat is perfectly consistent with the presumption that the “rationality” of households is bounded and local. The key assumption is not full blown rationality, but rather that the household be aware that there are alternative ways of meeting a want, and at least from time to time is sensitive to their relative costs.

We want to highlight that the theory of household behavior we have articulated suggests that certain kinds of possible substitutions and adjustments to changing prices are likely to be easier to make than others. In particular, substitution that can be effected by changing the relative usage of different activities in the set the household regularly is using is easier than substitution that requires the bringing into use of new activities. In the case of a rise in the price of meat, a household’s response is, under this theory, likely to be sensitive to whether its customary mix of dinner activities at least occasionally had included fish, or other alternatives to meat, or not. If not, substitution would involve the household doing things it had not been doing before, rather than simply changing the mix of things it had been doing. Our argument is that the “changing mix” kind of response tends to occur more rapidly than substitution that involves bringing in activities that are new to the household. Households that had not been eating fish occasionally before the rise in the price of meat may have in their mind that they do not like fish, and it may take considerable time before they even begin exploring the possibility that their prejudices were not justified.

While in this essay we will not discuss this matter in any detail, we note that shopping for something involves its own set of routines (Consoli, 2008) and that the speed and

effectiveness of attempts to find suitable substitutes may depend on relevant shopping routines. Thus the likelihood that a household that had not been eating fish will start experimenting with that option when the price of meat rises, and the time lags involved, almost certainly depends on whether the grocery stores it has been using supply fish, or whether to buy fish they need to go to a new store.

We have noted that the assumption that activities are specialized to meet particular wants does not mean that all inputs are similarly specialized to the meeting of particular wants. Some are, and some aren't. Thus a car can be used to get to work, go shopping, get to the theater, or take the kids to school. This fact means that, for an artifact like an automobile that can be used in a variety of activities aimed at different ends, certain other goods or services may be substitutes when it is used for one purpose, and other goods substitutes when it is used for other purposes.<sup>2</sup> We think the complication here is clarifying, not confusing.

Thus a rise in the price of gasoline on the use a multi-use input like an automobile (gasoline obviously is a complement to automobile use, in the sense that it is used in the same activities) may induce efforts to use the car less in a number of the activities where it is being used. But, as above, substitution of other modes is likely to be easier if it involves simply changing a mix of activities, than when it requires bringing in new ones. Thus a household that already occasionally makes use of mass transport to go to work is likely to find using mass transit more frequently for that purpose, and using the car less, an obvious and easy response to a rise in the cost of using the car. On the other hand, if shopping for certain goods, say clothing, customarily has been done by driving to a store

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<sup>2</sup> Here we draw a parallel with the notion of complementarity across constituent activities of consumption put forth by Menger (1950).

some distance away, and mass transport never used to get there, how to devise another way to shop for clothes may be less obvious and easy to effect. The response might involve exploring clothing stores that are closer to home or close to mass transport, but it might take considerable time before a new pattern is established.

More generally, when the price of a good the household had been buying and using rises, in some cases easy substitutions plus a small cutting back of aspirations regarding the want whose satisfaction has become more expensive may suffice to bring a household to a new equilibrium. But often these changes will not be sufficient. If not, more drastic substitutions may be invoked, like moving closer to work. And the satisfaction of other wants may be sacrificed; thus plans for a vacation may be abandoned.

We have been focusing on responses to a rise in the price of a good or service. Responses to a decline in a price obviously go in the opposite direction. Households that are buying and using that good will have a relaxation of their budget constraint, and be able to increase the extent to which they satisfy various wants. The activities employing the good in question and the level of satisfaction of the wants serviced by those activities are likely to be increased most. Alternative means of meeting those wants may be cut back, but this is not inevitable. Another response by households, that likely will take more time to effect, is adoption of new activities that employ the good in question, as a now less costly way of satisfying particular wants that had been satisfied in other ways, or as a means of addressing wants that previously were regarded as too costly to address.

Under the theory articulated here, it may take a household considerable time to even notice a fall in the price of a good that it has not been buying and using. And any response is likely to be sluggish.

The mechanisms described here generate, or rationalize, household “demand curves” in the sense of functions relating expected household (individual and collective) purchases of a good at various times in the future to future prices, given a set of initial conditions, including prices that had prevailed. Assume that the initial conditions were a household equilibrium, that the future price of a good (while not necessarily the same as the price that had been obtaining) will be constant over the period of analysis, and that all of the other variables relevant to household purchase decisions remain the same as they had been. Then the foregoing theory implies that purchases of the good in the future will be the same as those in the prior equilibrium if the price is the same, less if the price is higher, and more if the price is lower, with the demand curve becoming more elastic as time passes until at some future time a new stable order is established. This is very much in the spirit of, but a generalization of, Marshall’s distinction between short term and long term adjustments.

This kind of demand curve, or at least its interpretation, clearly differs in important ways from the demand curve of text book neoclassical theory. Among other things, there is no “utility function” behind the scenes, nor more generally can a household’s purchasing decisions be interpreted as “optimal”, in any non sophisticated sense of the term. Rather, they must be understood as having been strongly influenced by the past consumption history of the household, with preferences themselves largely a result of that history, as well as a factor shaping it. Under the theory we propose, consumption decisions need to be recognized as largely a matter of routine plus marginal changes in routine, except when the household is facing circumstances that are significantly new to it.



In our view, a major advantage of the theory we propose is that it identifies several different kinds of processes that are set in train by changes in the prices faced by a household, and in so doing calls attention to the fact (according to this point of view) that certain kinds of changes are more difficult to make than others. This perception, which we think ought to be quite helpful to economists trying to understand or predict how consumers respond to certain price changes, is totally absent in neoclassical consumer theory.

Despite these differences, the “demand curves” described here are capable of doing many of the same jobs as the demand curves depicted and rationalized in neoclassical theory. As with so many other useful concepts employed by economists today, the concept of a demand curve interpreted under the conditions above fits perfectly comfortably into the tool kit of economists committed to an evolutionary theory.

### 3.2 The Effects of Changes in Real Income

We note that, as in standard consumer theory, in the theory we are proposing here there is an income effect from a change in prices as well as a substitution effect. Thus a rise in the price of a good a household is purchasing requires it to cut down on purchases somewhere and to meet at least some of its wants less fully; its real income has fallen. A decline in the price of a good a household is purchasing and using enables it to meet its prevailing wants more fully, or it can target new ones, without increasing budget outlays. Its real income has increased.

Which brings us more generally to the perspective the theory we propose has on the effects of increases in real income, either the result of a decline in the prices of the goods

it is buying, or because of a greater cash inflow, on household consumption behavior.

Given a rise in real income, a household can meet the wants it already is attending to a greater degree than previously targeted, or it can try to satisfy wants it previously had not attended, or of course some of both.

Meeting already attended wants more fully sometimes can be achieved simply by obtaining more of the inputs used in the activities employed by the household and operating those activities at higher levels. Our observation, however, is that meeting wants more fully often is attained by purchasing “higher quality” inputs, rather than simply “more”. Within the theory we have developed, there is a natural interpretation of the notion that certain goods are of higher quality than certain others.

Consider two different activities capable of meeting a particular want, at least to some degree. Assume each has what one might call a defining input (along with, perhaps, some other inputs as well). We have proposed that in many cases an activity can meet a want more or less fully, depending on its level of use, which in turn is associated with the quantity of inputs used. However, there may be diminishing returns, and at some point marginal returns may fall to zero. If one of the activities directed to that want is able to achieve a higher level of want satisfaction than another activity, then it is reasonable to say that its defining input is of higher quality than the other. We note that, if the activity using the high quality defining input is more expensive to operate at levels of want satisfaction that both can achieve, while households with low incomes and lower want satisfaction targets may buy the lower quality input, as their income rises they may be expected to switch to the higher quality one and the activity employing it. Again, no assumptions about a global utility function and maximization are required, but rather

simply the assumption that as the income constraint relaxes, households respond by trying to increase want satisfaction in a variety of different dimensions.

It is apparent that, in addition to meeting attended wants more fully, an important part of the response of a household to a rise in income is to try to meet wants that were unattended before, goals that had seemed out of reach, or which were not even contemplated. And in general this will require the household to bring in new activities to its repertoire.

There is a definitional issue here, a matter of specifying categories where the lines between things are blurry. We noted earlier that both wants and activities can be defined narrowly or broadly. Is winter vacationing in the Caribbean or the Canary Islands better regarded as meeting a want that was not being met before, or simply as meeting a general family want for recreation more fully (perhaps with a “higher quality” input)? Is the activity involved a new one or should it be regarded as a new variant of the traditional family activity of taking a summer vacation at a nearby beach? While logic does not provide clear answers to these questions, we think that recognizing a good portion of a household’s response to rising real income as meeting new wants through new activities helps one to understand the processes involved. If the Caribbean had been unfamiliar to the family, as was dealing with a travel agent, and if the attractiveness of going on a winter vacation at some warm place had before been regarded as simply unaffordable, then going to the Caribbean for a vacation may usefully be regarded as meeting a new want through a new activity.

We note that “dealing with a travel agent” is another instance of a matter we signaled earlier. Consumption activities, or the goods and services that go into them, can differ

significantly in the routines involved in the associated “procurement” routines. Knowing how to procure is another of the various skills one needs to have in order to be an effective consumer.

A rise in real income usually is associated with a rise in the opportunity cost of time (Metcalfe, 2001). We suggest that it is not so much that payment per hour worked is higher; in many cases earning more by working longer cannot be done or is subject to low marginal returns. Rather, we propose the principal reason is that with higher money income, the household can afford financially to do more things, like vacationing in the Caribbean, that are highly desired but take household time. Thus there is a strong tendency for households to try to cut back on the time they spend on basic activities to make time for the new ones they now are financially able to undertake. In some cases this can be accomplished by in effect “mechanizing” activities that used to be done by hand, for example by buying a machine that washes dishes. In some cases goods or services purchased from the outside are substituted for the household’s use of its own time; prepared foods and ordered in dinners are good examples. As suggested above, these kinds of substitutions are easy if they do not require the household to learn to do things it has not done before, more difficult if the substitution requires quite different and unfamiliar ways of doing things.

What determines what new wants get attended as household incomes rise? Standard consumer theory needs to explain goods with high income elasticities of demand in terms of the shape of global utility functions, a conception that we have argued should not be a part of any serious theory. In contrast, the theory we put forth would explain how new wants are acquired by low and middle income households as their incomes rise in terms

of emulation of the lifestyles, or the believed life styles, of higher income people (Duesenberry, 1949).

### 3.3 Household Response to New Goods and Services

Analysis of how wants and consumption patterns change as a broad society gets richer obviously requires a different kind of analysis. We evolutionary theorists are not alone in arguing that the principal driver of economic growth is innovation. The theory of consumer behavior we have been developing is well suited for a relatively rich and variegated treatment of the opportunities and challenges provided to households by the appearance of new goods and services, which has been a central feature of the economic growth societies have experienced.

Some new consumer products are reasonably regarded as substitutes for older products, perhaps of “higher quality”, but not requiring of the household that they engage in activities that are significantly new to them, or opening the possibility to meet wants that could not be met before. Consider, for example, a new personal computer that operates at faster speed than the previous model, and has more memory capacity, but is not capable of doing things the previous model could not. By the theory we have been developing, the new computer would be considered as being of higher quality than the old model (it enables more work to be done faster) but not a good that enables wants to be met that could not be met before.

But it is apparent that economic growth driven by technological innovation, as we have known it, often involves the introduction of new goods that can meet wants that simply could not be met before, and which in effect change the lifestyles of the individuals and

families who adopted them. Consider for example the appearance of the automobile and the telephone in the early years of the twentieth century, or of television, or rapid low cost air travel later in the century, or the first personal computers that became available a quarter century ago. While recognizing the arbitrariness involved in dividing wants into a set of non-overlapping categories, we believe a significant advantage of the theoretical framework we propose is that it makes sense of the notion that innovations often enable new wants to be met, and at the same time change how households operate in the sense of the activities in which they engage.

Thus the formulation of consumer theory we propose suggests that the response of households to the availability of new goods and services may involve a significant reorientation of their targets and goals, which in many cases only can be accomplished in the course of learning to do new things. Thus back in the 1950s, when relatively low cost air travel was becoming available, few households had a good feel for the benefits, the utility they would gain, from the reduction in travel times that this permitted. What were the advantages of being able to get much more quickly to familiar haunts? What new places would be worth while going to? Lots to learn but only through experience. And much of what was learned was about the value of meeting wants that were not being met before.

Turning to more recent times, how should one regard the appearance on the market of cell phones? Should the cell phone be regarded simply as a new telephone device that can be used in the familiar activity of using a telephone, albeit one that greatly increases the range of circumstances where calls can be made or received? Or does use of the cell phone involve the employment of a new activity? And does it enable wants to be met that

could not be met before? We suspect that there is no single answer to these questions. For some people the cell phone seems to be being used as a simple extension of the traditional phone, a portable device to be used on important occasions where one wants to use a phone but one is away from access to the traditional home system. But for other people it is clear that the cell phone, particularly the new versions equipped with cameras and access to the Internet, has provided a means of communication and a mode of access to a range of information that was not available before, and has enabled them to meet wants that they could not meet before.

The advent of Email certainly is a clear case of a new good or service enabling wants to be met that could not be met before, through the use of a new activity. Users of Email needed to learn new techniques, new routines. The fact that incorporation of new goods and services into the set regularly bought by households very often involves changes in the set of wants the consumer aims to satisfy, as well as new activities, has important implications that a theory of household consumption behavior needs to recognize. For one thing, in many cases it is not obvious before the fact that a latent want exists that a new product might serve. The wants, the uses, a new product ends up serving may be very difficult to predict in advance.

There is a sizeable body of work that is totally ignored by standard economic theories of consumer behavior on the “diffusion” of new goods (see e.g. Rogers, 1983; Von Hippel, 1986). However much of that literature does not recognize adequately that the speed and extent of acceptance by consumers (or firms for that matter) of new products or services which enable things to be done that could not be done before depends on the development of appreciation for what those new capabilities open up. As we have noted,

this may involve the emergence of recognition of wants that had not been thought about before; the case of Email (and the Internet more generally) illustrates that, in many cases, new goods with new capabilities potentially can be used to meet a range of wants, some established and some new. A significant learning process may be involved, and may take place slowly, as households learn the range of things a new good may be used for, the uses they find valuable, and develop preferences for particular variants of the new good (see e.g. Teubal, 1979).

That learning process is cultural as well as individual. Widespread diffusion of new goods requires and involves changing cultural attitudes towards what are the important wants than ought to be met, and the appropriate means of meeting them (Aversi et al, 1998; Witt, 2001). To a much greater extent than the economists' writings on demand in general, the diffusion literature does recognize, highlight, that potential customers of new products differ. A significant portion of that literature is concerned with the characteristics of "lead users", households (or firms) who are the first to try new things. Such early users are innovators in a very real sense of that term since their experience serves not just as 'information' but also as a model for later adopters.

Most analyses of diffusion take the thing being diffused as a given. However, the evolution of virtually all new goods, consumer as well as producer, involves changes in the product as users react to it, identify the uses they find attractive, and develop tastes and preferences regarding desirable product attributes. As Von Hippel (1986) has stressed, early users often are tinkerers, modifying the product as well as just how they use it in order to increase its value to them. And of course in most cases as diffusion of a new good proceeds producers present new versions, sometimes in anticipation of the



emergence of new uses and preferences, sometimes in response to indications of their emergence.

While usually neglected in the diffusion literature, it is important to recognize that the process of economic development as we have known it involves not only the continuing introduction of new goods, but the disappearance of older goods that have been forced out by the new. For individual households, and the society as a whole, the changes may entail significant real costs. Households that had developed strong preferences, needs and skills for old goods may find these goods no longer available, be reluctant to try the new goods that have replaced them, and find that they are incompetent in using them at first. In short, old procurement routines may become irrelevant and new ones may prove difficult to master. It is not surprising that in many such cases it is the new generation that adopts the new good, and the practices associated with it, first. The older generation may lag, or in some cases simply refuse to make the adjustments. Household consumption skills, as the skills of business firms, may be subject to “competence destroying technological change” (Tushman and Anderson, 1986).

#### **4. A Summing Up**

The theory of household consumption behavior we have been sketching differs from neoclassical theory not only in structure, but more generally in the broad theoretical strategy involved. It is a “behavioral” theory in the broad sense of the term we proposed earlier. Both neoclassical and behavioral theory see human actors as purposeful, and trying to do as best they can given what they know of the situation they are in and the constraints they face. But the strategy behind neoclassical theorizing is to move from this perspective to the argument that actors – households making consumption decisions in

this case – choose optimally. In contrast, the strategy of behavioral theorists is to try to construct an abstract but realistic model of what they actually do.

As we observed earlier, it is fair to say that advocates of neoclassical theory do not care about what processes actually determine what economic actors do. The strategy is to ignore process and argue that what they do can be explained by the proposition that they behaved “as if” they acted so as to maximize their well being. This theoretical strategy was rationalized most explicitly many years ago by Milton Friedman (1953), in his response to critics of the theory that the prices firms set maximized their profits who argued that firms went through no maximizing calculations, but rather had a set of relatively simple rules for setting prices. Friedman countered that whatever those rules were, and he really did not care about their particular form, the prices firms set could be predicted on the basis of a model that assumed they maximized profits.

A similar debate has not occurred regarding the neoclassical theory of consumer behavior. The arguments of many scholars that a number of the particular assumptions built into neoclassical theory can be shown not to be true simply has been ignored by most neoclassicalists. But it is clear that their position behind the scenes is that the assumption that households behave “as if” they maximize utility yields pretty good explanations and predictions and that is all that matters.

Our position, of course, is that that theory in many cases does not explain or predict very well, and in any case that is not all that matters.

We would argue that neoclassical consumer theory works best when the analysis is of responses to relatively small changes in the prices of goods and services with which households have considerable experience, and where “changing the mix” provides the

bulk of an adequate response. It is interesting and relevant, however, that the kind of behavioral, process oriented, theory that we have developed yields very similar conclusions in cases like this. And we would argue that our process oriented theoretical argument is more convincing.

It is clear that neoclassical theory does a much less adequate job of explaining and predicting responses to large changes in prices. The problem is that that theory represses the uncertainties, and the time involved, for households to make significant changes in their patterns of behavior, particularly when these entail learning about and learning to do new things. We note two important weaknesses of neoclassical theory here. One is the assumption that households have well defined preferences regarding goods and services they never have experienced. The second is failure to recognize that even awareness of choice sets is to a considerable extent dependent on what has in fact been chosen, and the process of choosing. The behavioral theory we have proposed does not have these weaknesses, and our formulation of what happens highlights the learning that is required before any new equilibrium is reached.

And as we have stressed, a principal motivation for our efforts to develop the theoretical framework we have put forward here is our belief that neoclassical consumption theory cannot deal adequately with consumer responses to new goods and services. An important part of the reason is similar to what we have been discussing above: the need to incorporate learning about, learning to use, and learning the value of, into analysis of what happens when households do new things. And it is important to recognize, not repress, that in many cases the purchase and use of new goods is associated with the attendance and meeting of new wants, which often had not even been recognized before.

The notion that new wants from time to time emerge, and often are associated with the emergence of new goods capable of meeting them, is completely foreign to the logic of neoclassical consumer theory.

We recognize that in many ways the theory we have been putting forth is sketchy. In part this because we have been proposing that that theory is capable of dealing with a wide range of questions of interest to economists, and have had to be somewhat terse in our treatment of different ones. In subsequent papers we will deal with several of these questions in more detail.

However, another reason is that, as behavioral (and evolutionary) theorists, we are reluctant to build into a theory propositions about what people do that do not have some empirical support. We would include as empirical support careful observation of what people do, and careful reflections of people of what lies behind what they are doing, as well as what is learned through systematic empirical research. On the basis largely of the former, we are confident about our theoretical proposition that consumption behavior is to a considerable extent a matter of routine, but that on the other hand significant changes in consumption involve uncertainty and learning. We are confident that this learning involves both learning how to do things in different ways, and learning what one likes, and that preferences tend to get changed in the process. But the details are highly uncertain.

The theory we have been putting forth is we believe on the one hand a perspective that strikes a respondent chord with economists and other scholars of a behavioral orientation, and on the other hand relatively novel as a formal theory. We ourselves are just beginning to learn how to work with it. We would welcome company.

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