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Learning to consume – A theory of wants and the growth of demand

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Abstract. The theory of economic growth takes little notice of what is happening on the demand side of the markets so that ever more goods and services can be sold. In order to make progress, this paper revives a classical notion in economics, the concept of wants, and re-casts it in terms of a behavioral theory. Hypotheses are discussed concerning the wants people pursue, the changes in these wants, and the corresponding consumption knowledge. The implications derived focus on why, in spite of the historically unique growth of per capita income in the modern economies, consumption has not been altogether satiated. In the suggested explanation, increasing variety of consumption items offered in the markets and increasing specialization of the consumers in their demand activities play a key role.

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I Introduction

In the theory of economic growth little notice is usually taken of what is going on the demand side of the markets in the process of economic growth. However, the historical experience that a rising (real) per capita income coincided with a rising per capita consumption expenditures is by no means self-evident. Why and how has it been possible to sell ever more goods and services to consumers? Is the "pure, imperturbable belief that human wants are insatiable" (Lebergott, 1993, p.69), which many economists seem to hold, really acceptable? Obviously, the growth of (real) consumption expenditures is not simply a matter of multiplying the items consumed – eating ten hamburgers per day rather then two, using two hundred pairs of shoes rather than twenty, playing on five pianos rather than one. Although multiplicative growth of this kind occurs to a certain extent, it cannot exclusively explain the growth of per capita consumption. The demand for many consumption items can reach a point of satiation as most economists

readily admit since Engel's Law (see Houthakker, 1957). Therefore, qualitative changes and the increasing variety in the composition of items consumed can be expected to play a key role for the sustained growth of demand. However, despite the relevance of these phenomena for understanding modern economic growth (and, moreover, the prospects for its continuation) economic theory has little substantial conjectures to offer.

Standard microeconomic theory of consumption portrays people as being endowed with given tastes and as consuming what they can afford. If they can afford more, they are supposed to consume more – changes in the quality and an increasing variety of the consumption goods are not addressed. Changing proportions in the demand for existing goods in a growing economy are attributed to the goods' income inferiority or superiority – begging the question of why the goods are considered inferior or superior. In the literature that attempts to explain changing quality and increasing variety of products and services the conceptual frame is in most cases provided by the theory of product differentiation. Correspondingly, the focus is on its technological conditions and constraints – which implies a supply side perspective (Dixit and Stiglitz, 1977; Metcalfe and Gibbons, 1989; Andersen, 1994; Saviotti, 1996; Teubal and Zuscovitch, 1997; for a survey see Wadman, 2000). A few other contributions, such as Pasinetti (1993, Chap. 4), build on empirical generalizations about co-variations between income and the demand for particular consumption items. All these interpretations are useful in their own right, but they do not provide much insight on why consumer behavior changes during the process of economic growth.

One reason for the rather unproductive state of affairs seems to be the preoccupation of modern consumption theory with the decision making calculus and the logical explication of formal axioms (often deplored by prominent authors such as Georgescu-Roegen (1954), Ironmonger (1972, Chap. 1), Pasinetti (1993, Chap. 4) – even though they continue to employ them in their own work). Individual preference orderings satisfying certain axioms may imply a utility function or functional with certain smoothness and concavity properties but the "explanation" for the sustained growth of per capita consumption relies on a non-satiation axiom of some kind and the continuous relaxation of the budget constraint as a side condition. In order to go beyond such "explanations" some more substantial conjectures must be introduced which can help to answer the really important questions: How do consumers arrive at the preferences they have (are they innate or learnt, i.e. culturally acquired)? Do the preferences change and, if so, how? What are the objects of the consumers' preferences, i.e. what is it that people demand and consume, and why? What role is played by consumption knowledge and all the factors that influence it?[1] Once consumer theory is able to answer

[1] Such conjectures were at the core of the Benthamite program, but were also quite common elsewhere in economics before utility theory became formalized (see Lewin 1996, Witt 2000). Karl Menger (1871/1950, Chap. 1), to take just one example, submitted right at the beginning of his principles that there is a demand for goods because people have wants and have learnt that their wants can be satisfied by these goods. As will turn out below, this conjecture may be taken as a starting point for an attempt to inject more substance into consumption theory.

questions like these it should much better come to grips with the significant changes taking place on the demand side of growing economies – as it should be able to explain what satiation means and where and when it occurs.

To make progress in that direction, the present paper returns to the notion of wants that played a role in the older economic literature, but disappeared from utility theory during its process of formalization. A few hypotheses on wants, on changes in them, and on (changing) ways of serving them, are suggested, and some stylized historical facts about the evolution of consumption, which may be relevant for assessing the hypotheses, are discussed. In Section II the foundations of the theory are outlined, focusing on genetically determined aspects of human behavior and some hardwired human learning propensities. Section III presents the central hypotheses assumed to explain learning and specialization in consumption activities. The implications of the theory with respect to the growth of consumption, the avoidance of satiation, and the role of an increasing variety of consumption items are presented in Section IV. Section V offers some conclusions.

II Wants and ways of serving them

As noted by Hirschman (1982, Chap. 2), the meaning of the term "consumption" is ambiguous. For example, people are said to "consume" free energy accessible to the anabolism of their body in the form of a most diverse diet. The term consumption here refers literally to an act of eating up, and the purpose of the act – to maintain one's life function – is evident to every human being. However, people are also said to "consume" products supplied, e.g., by the electronic appliances industry in which case no act of ingestion or material dissolution of the item consumed is implied, and the motive for consumption is less obvious. The difference between the two cases reflects the etymology of a term that has been used to cover an increasingly broader set of activities as the subsistence economy of self-supporting households gradually turned into a modern market economy with its highly differentiated divisions of labor. Economists have tried to resolve the ambiguity of the term consumption by associating it with an expenditure: the money paid for a commodity or service by a consumer, i.e. someone not using the commodity or service further for commercial production or trade. In this meaning, "consumption" is actually a special form of a market transaction (and, thus, presupposes the organizational form of a market economy as the above notion of consumption as "eating up" does not). In such a view, the trivial purpose of consumption, i.e. the corresponding expenditure, is to gain command over the consumption item. But why people want this command is usually left open. Their motives are considered a matter of subjective preferences which are not explained.

In order for a richer theory to be conceived it may be useful to dwell a bit on the features of the objects of consumption, the ways of recognizing them by the consumer, and the possible motives of consumption. Two notions may

be distinguished; first, the notion of behavioral dispositions, called *wants* here, which arise from a state of deprivation of an organism; second the notion of *consumption knowledge*. The two notions may conveniently be associated with the non-cognitive and the cognitive levels of human behavior respectively. This means that cognitive knowledge is taken as the basis for assessing the suitability of potential means for satisfying wants and for deliberate choice. With respect to the first notion a distinction will be made between basic wants and acquired or learned ones, where for the former the following hypothesis may be proposed:

> H.1: Basic wants are part of the human genetic endowment. They can be satisfied temporarily either singularly or in more or less complex combinations by consuming appropriate items in suitable quantities, and the desire to satisfy the wants motivates the corresponding activity.

Because of their genetic determination the basic wants are shared, with the usual genetic variance, by all humans (and not only humans).[2] These basic wants are also called "needs" and attempts are sometimes made to define a hierarchical order in which people strive to satisfy them [e.g. in Maslow (1954) or Ironmonger (1972)]. However, the empirical basis of such attempts is unclear so that an ordering of wants will not be presumed here.

Innate wants include physical needs such as the need for air to breath, for aqueous solutions to drink, for food of certain quality to eat, for medicine to cure an ill. The corresponding consumption items air, water, food, medicine will be called "direct inputs" here, referring to the fact that they are "consumed" in a literal sense. A significant feature of all wants where deprivation can be removed by consuming direct inputs is the fact that consumption per unit of time is subject to physical satiation. Additional consumption of direct inputs beyond the temporary satiation level does not create further want satisfaction, but may sometimes cause aversion. The motivation for additional consumption vanishes as the satiation level is approached. However, the activities of the organism gradually use up the direct inputs. If there is no further consumption, a state of deprivation will re-emerge, and the motivation to consume will return.

For other physical needs, like the maintenance of body temperature or sleep, things are more complicated. There are hardly any direct inputs available by which these needs can be satisfied. For to serve them some means or tools such as clothes and/or heating facilities, or a bed or lair, are required which are not "consumed" in the literal sense. The indirect input they provide are their services. Hence the satisfaction of these wants by consumption activities hinges on what may be called "services of tools".[3] Consider, to give another example,

[2] A similar argument is developed in Corning (1983). In behavioral psychology the theoretical concept corresponding to innate wants is that of genetically fixed, primary reinforcers; see the list of empirically observed primary reinforcers in Millenson (1967, p. 368).

[3] A distinction like this has often been made in the literature, in the most elaborate form perhaps in Becker's household production theory, (see Becker, 1976).

the presumably innate want for cognitive arousal.[4] One tool among many which serves the want for cognitive arousal is, for instance, a television set. In itself, a television set is fairly useless as we all know when we cannot turn it on. It only becomes useful through the service it provides, i.e. when it can emit a flow of visual and acoustic information whose quality we find entertaining. The want for cognitive arousal may, of course, also be satisfied, at least to a certain degree, by the organism's own activities or through social interaction with other organisms. The availability of tools is therefore not necessary for satisfying the want, but it may in most cases be sufficient. The same holds for yet other genetically determined wants like the longing for sex, for affection, for physical activity – but not for heavy physical work – or for social recognition/status.

In general, there are usually diverse ways of satisfying innate wants, particularly those involving the service of tools. Conversely, a particular direct input, and even more so a particular tool, may be able to serve several wants at the same time. The television set, to take the example again, may simultaneously serve the longing for entertainment and for social recognition/status. In H.1 it was claimed that a consumption activity is motivated by the satisfaction it promises to yield. It is important to note that this is also valid where wants are satisfied by means of the services of some tools. Being deprived in terms of those wants is what motivates the consumption expenditure on the tools. Likewise, a satiation level (defined per unit of time) may be reached as in the case of the consumption of direct inputs: we may feel warm enough, may have had enough sleep, or enough entertainment. But, and this is an important difference, the number and the quality of tools like beds, clothes, heating facilities, and television sets are not themselves subject to satiation. This means that the consumption of these tools is not necessarily determined by the degree of relative deprivation of one of the underlying wants (which are served by the tools) or even all underlying wants. There are independent, cognitively conditioned motives which rest in the individual perception of the instrumental relationship between tools and wants. These factors exert an influence on the number of tools purchased, e.g. (mis-) conceptions of the rate and the intensity of utilization. Their influence is particularly significant where all the underlying wants are already (temporarily) satiated.

Since the deprivation of underlying wants motivates the consumption of "tools" only to the extent it has been recognized that these tools provide corresponding services, the role of consumption knowledge, the second notion mentioned above, enters the picture here. Although it is not a matter of cognition alone, the use living organisms make of tools is correlated to their cognitive capacity. Most living organisms are constrained in this respect to a consumption technology which is based on instinctive (i.e. inborn) patterns of consuming direct inputs and, if at all, a very limited use of tools. Man's consumption behavior, in contrast, is characterized by an intense use of tools, the results of the superior human cognitive capacity. Indeed, the demand for tools is the predominant

[4] The want for cognitive arousal – or, to put it in everyday language, entertainment – is at center stage in Scitovsky's (1976) criticism of American consumerism.

feature of modern consumption expenditures. The following hypothesis may be propounded for the cognitive aspects of consumption behavior.

> H.2: People reflect and learn about how to instrumentalize direct inputs and the services of tools for the satisfaction of their wants, i.e. build up consumption knowledge, by personal experience and inventiveness. Knowledge implicit in socially practiced consumption technologies is also acquired by communicating with, and observing and imitating, other consumers.

In view of H.2, the individuals' current consumption activities are contingent on the state of their subjective knowledge of the consumption technology and may therefore change if their knowledge changes, e.g., through information offered by the producers of consumption items. This causal relationship – the impact of cognitive learning on the evolution of consumption – deserves more discussion. Before, however, it is necessary to investigate the role of non-cognitive forms of learning for the theory of wants.

III Learning and specialization in consumption

Consumption activities change over time as a result of two kinds of learning. On the one hand, new ways of satisfying innate wants, and, in particular, satisfying them in new combinations, become feasible through cognitive learning. As just discussed, consumption knowledge about the set of direct inputs and services of tools is thus expanded into ever more sophisticated forms. On the other hand, the set of wants which people have is not invariant. Through non-cognitive learning in the form of conditioning that starts from a limited number of innate wants, a structure of subjective wants is formed. Consider first these elementary, and again genetically coded, learning processes, which follow similar patterns in humans and in other higher species.

Carrying out an activity that contributes to the satisfaction of an innate, not yet satiated, want stimulates the sensory system in the form of a rewarding experience.[5] Learning in this non-cognitive context means the following. Suppose there are neutral activities which do not contribute to the satisfaction of innate wants themselves. Suppose further that there are activities which do contribute to such satisfaction and which are therefore experienced as rewarding. An association between neutral and rewarding activities is learnt (or conditioned) if the two activities happen to coincide sufficiently often over a period of time. The implication of this is that, after learning the association between the neutral and the rewarding activity, the originally neutral activity is itself experienced as rewarding independently of the originally rewarding activity – which may thus be dropped temporarily. Hence the following hypothesis may be proposed:

[5] According to the theory of operant conditioning any activity followed by such a stimulus is reinforced, i.e. is chosen more frequently than it would be with no such stimulus following it (Skinner, 1966).

H.3: By associative learning, acquired or learned wants emerge. Their satisfaction, which is obtained by carrying out the originally neutral activities in the association, is a conditioned rewarding experience. The strength of an acquired want fades if the association on which it is based is not at least occasionally corroborated.

Imagine, to give an example, a regular joint consumption of food in company of some particular people or in a specially arranged setting defined, e.g., by aesthetic aspects (architecture, furniture, tableware, table music etc.). The innate wants on which the association may rest here is to obtain nutrition and/or the cognitive arousal of the social interactions (perhaps also social recognition/status). After a while, facing such specially aesthetically arranged settings becomes the acquired want. If satisfied, this is a rewarding experience in itself, even if no longer accompanied by eating and social activity.

In view of the huge associative capacity of the human brain it is easy to understand that entire chains of acquired wants can emerge in this way from the few innate wants through the learning of associations over a lifetime (Pulliam and Dunford, 1980, Chap. 2). Since an activity may result in the simultaneous satisfaction of more or less complex combinations of innate wants, there is an immense number of opportunities for learning associations and, correspondingly, of acquired wants. A particular and important category of acquired wants which have a similar significance for many people are those for universally usable reinforcers like money, power, public attention, etc.

The nature of deprivation of genetically coded wants, on the one hand, and of acquired ones on the other, differs substantially. This fact has important implications for consumption behavior. The intensity of innate wants varies with the degree of their deprivation. In the case of acquired wants, in contrast, there is no specific deprivation, i.e. it does not matter whether or not they have recently been satisfied. Instead, what counts is the degree of deprivation relating to the original, innate want(s) on which the acquired want is conditioned. Because acquired wants are often conditioned on several innate wants which are rarely all satiated at the same time, the intensity of acquired wants can be relatively high over a long period of time. This is particularly true of wants for universally usable reinforcers.

For a full understanding of the role of learning processes for consumer behavior it is, of course, necessary to take into consideration the other, cognitive, kind of learning that may occur at the same time. Although the learning of associations by no means presupposes cognitive participation, the latter may often be present and may potentially interfere with non-cognitive learning. It is possible to acquire a want for aesthetic tableware, to use the example again, without knowing much about it. More often than not, however, people with an emerging taste of that kind can be observed to start collecting relevant information, and they often develop a highly differentiated knowledge of technological and aesthetic details. Indeed, cognitive learning of this kind is the basis of the advanced and most sophisticated consumption technologies of present day economies which offer

alternative tools and direct inputs for satisfying wants abundantly. As stated in H.2, people obtain the appropriate information from personal experience, from observation of, and communication with, other consumers, and from information provided in other ways, not the least through advertising.

The crucial point is that, under the conditions of the highly differentiated consumer markets of the modern economies, there is too much information about consumption technology offered to the individual consumer to allow her/him to understand, memorize, or even process all of it. The abundance of goods and services offered for consumption makes it impossible to know, and be aware, of all available choices and their many features. By necessity, therefore, information must be processed selectively. How does that selection work? Wherever information inflow exceeds human information processing capacity, the selective processing of incoming information, i.e. whether and to what extent incoming information gains attention, is guided by attention processes (see Anderson, 1990, Chaps. 3 and 5). These, in turn, reflect the individual's current set of innate and acquired wants and the relative state of their deprivation. We are more likely to notice (and memorize) information relating to something we have (had) a want for and whose satisfaction has earlier been experienced as rewarding[6] than to notice information about something with which we have had no such experiences. Cognitive learning is tied by this effect to the domain of non-cognitive learning processes in a natural way. Yet there is also a converse effect. Since what is more likely to gain cognitive attention is also more likely to be involved in future activities, attention processes also shape the basis for non-cognitive learning of associations. The two effects described tend to be mutually reinforcing.

In addition to these influences, attention processes are also shaped by communication with other individuals, the more so the more intense the communication is (see Bandura, 1986, Chap. 2). Analogously, we are therefore more likely to notice and to memorize information if it relates to objects of intense communication. Thus, cognitive learning is also tied to influences of collective behavior or what may be called the "agenda-setting effect". Again there is an interaction with non-cognitive associative learning here. We tend to communicate more intensely about an act of consumption which has earlier been experienced as rewarding. On the other hand, what is "on the agenda" is more likely to draw attention and is, therefore, more likely to be involved in future activities. Hence, the basis for non-cognitive learning of associations is also shaped by an agenda effect. Taken together, the two-way interactions imply that wants and knowledge within intensely communicating groups tend to develop in much the same direction and may give rise to sub-cultural commonalities in consumption patterns.

The joint effects of constrained, and therefore selective, information processing and the associative learning of wants can thus be summarized by the hypothesis:

> H.4: Because of selective attention processes, both cognitive and non-cognitive associative learning causes wants and consumption knowledge

[6] Note that, in this context, avoiding or escaping something may be interpreted as a want as well.

to selectively become more detailed and to induce specialization in consumption. To the extent to which selective attention processes are influenced by an agenda-setting effect which emerges within intensely communicating groups, specialization in consumption may become a collective "sub-cultural" phenomenon specific to the respective groups.

H.4 amounts to something like a refinement effect in both the acquired wants and the knowledge of consumption technology, i.e. direct inputs and tools serving those wants, an effect which may often be socially conditioned. The selective refinement of acquired wants and consumption knowledge entails specialization in consumption. Because of the natural genetic variance in the strength of innate wants and their combinations, and because of the many accidental and subjective contingencies in their learning history, people tend to specialize in their consumption patterns in many idiosyncratic ways. The more opportunities are offered by the consumer goods and services markets for specializing along one's own path the further refinement can be driven.

IV Explaining the growth of consumption

The economic growth over the past two hundred years is unprecedented. So, too, is the growth of demand, i.e. real per capita consumption.[7] Economic theorizing has been eager to discuss why and how a growing output can be maintained. It has shown little interest, however, in the role of the exceptional growth of demand. Only one necessary, yet certainly not sufficient, condition for a sustained growth of demand, i.e. real consumption expenditure per capita, is usually acknowledged: per capita real income must be rising. Strictly speaking this is only true if income is an always binding constraint. Note that even then rising real income is not also a sufficient condition. For a relaxation in the budget constraint to indeed induce an increase in demand, the additional condition that there are at least some wants which have not yet been satiated or which are insatiable in general must be met (or other, e.g. cognitive, motives for increasing consumption must be present). But why should an increasing purchasing power not lead eventually to the satiation of all wants and, thus, slow down the growth of per capita consumption until it finally comes to a halt? It remains to be shown in this section that this key question can fruitfully be approached in the light of the hypotheses previously stated, presuming, for simplification, that the condition of rising real income is met.[8]

In terms of the distinction made above, a growing real consumption per capita means that either more direct inputs, more tools, or more of both means of satisfying individual wants are purchased (or more costly variants). Let us first turn to

[7] See, e.g., Lebergott (1993). Note, however, that the transition from the subsistence economy of self-supporting households to the extended market economy causes problems for a time consistent consumption growth accounting. As mentioned in Section 2, the "consumption" of goods and services produced within the households cannot be measured in the same way as the "consumption" of the same goods and services when households purchase them in the markets.

[8] For a discussion of the reasons why this condition has historically been met see Witt (1999).

the consumption of direct inputs. Innate wants can be satiated comparatively easily by increasing the intake of the appropriate direct inputs. Unless people expand their consumption beyond the satiation level or waste direct inputs (i.e. purchase, but do not really "consume" them), the absolute per capita consumption of these inputs per unit of time could therefore be expected to face an upper bound. Food is an obvious case and its various forms are therefore preferred candidates for demonstrating statistically that there exist inferior goods. However, even though the food industry is already battling with the satiation problem, there seem so far to have been ways of circumventing it – after all, household expenditure surveys show that per capita consumption even of many inferior goods is continuing to grow in absolute terms and, thus, still contributes to economic growth. How can this be explained? Several reasons can be given and, it is claimed, these reasons *mutatis mutandis* apply to all direct inputs.[9]

First, with rising income the kind and quality of direct inputs consumed at, or close to, the satiation level, e.g. of the diet, changes in the direction of sensory more appealing, more refined, more "exotic", and usually more costly, ingredients. Since that substitution process includes recombining ingredients in an innovative way, it may contribute for a long time to rising consumption expenditures. Second, in their attempt to escape a situation in which market demand would be satiated, producers develop new products by which the sensory perception of a rewarding consumption experience can be enjoyed without (so quickly) approaching physiological satiation. A prominent example are food stuffs made with artificial sweeteners which allow the consumers to increase the intake of, and thus the expenditures on, sweets to a much higher level than the satiation level for similar products made with sugar. A similar role is played by spices and, more recently, artificial aromas which can be used as low-calory substitutes for traditional flavoring ingredients with higher caloric content. Thirdly, product innovations are brought to the market which combine several direct inputs or direct inputs and tools or services. The combination is intended to appeal to several wants at the same time. Products serving a combination of wants have the following property. When approaching the level of satiation the motivation to consume a direct input vanishes unless the act of consumption is simultaneously serving other, not yet satiated, innate wants. If a combination good c appeals to several wants, and if some of them are not yet satiated at a certain consumption level, or cannot so easily be satiated, a sufficient motivation for continuing to consume good c may therefore, according to H.1, be maintained.

This means that the units x consumed of good c can exceed the satiation level $\bar{x}_A$ with respect to want A for the sake of obtaining additional satisfaction for the less easily satiated want B up to its satiation level $\bar{x}_B > \bar{x}_A$. If, in the given context, want B cannot be satisfied other than by consuming good c, i.e. if the consumption inputs combined in c are indeed inseparable, and if the

[9] As a rivaling explanation one may suggest that, despite rising real income, the satiation level for direct inputs has not yet been reached in the lower income classes while it has been in the higher income classes. However, there is no empirical evidence for this hypothesis, and casual experience does not seem to support it.

production costs of those inputs are additive, then this implies that an additional consumption expenditure can be elicited by offering good c. The attempts to combine food and entertainment may figure as one example and, as another, the attempts to combine the intake of liquids (preferably alcoholic ones) with social approval/status and/or cognitive arousal and affection. Thus, if the producers succeed in creating new combination goods which appeal simultaneously to an almost satiated want as well as to less easily, or even not satiable, innate wants such as those for cognitive arousal, health, or social recognition/status, this can contribute to the growth in demand. The appeal of such new combinations is certainly supported by the refinement effect described in H.4 which opens up an entire universe for extending combinations. Consider, to use the food example again, the prototype of an educated consumer, the "gourmet". Typically, such a specialist in good food has a rather selective perception of certain aspects of life but, in the area of her specialization, a very detailed one concerning the combination of direct inputs making up the objects of her desire.

Now consider the case of tools consumed to serve wants, innate as well as acquired ones. The lion's share of the long term growth of per capita consumption seems to be due to the increasing importance of those tools. Available sources document an almost universally increasing endowment of households with durables and appliances at different times and places.[10] As mentioned above, not the consumption of tools themselves, but of their services is subject to satiation of the underlying innate wants, and the consumption of tools serving acquired wants is by itself not subject to satiation at all. Therefore, the question of *how many* tool per unit of time are purchased by an individual or a household to serve its wants does not depend on the relative deprivation of innate wants alone. (Nor is it often so obviously due to the insatiability of a want acquired by conditioning as in the case of a collecting mania.) It is also conditioned on cognitive factors which motivate a purchasing decision. For instance, to understand the purposes of appliances and to have an idea of how those purposes can serve one's wants, e.g. as a substitute for one's physical work and, more indirectly, as a means of saving time, is almost trivially a condition for the willingness to buy them. But factors like the subjective assessment of their rates of utilization (services consumed per unit of time) and depreciation also play a role for the expenditure on appliances per unit of time. If, with rising income, utilization rates decline and depreciation rates increase, then consumption expenditures for appliances will grow. Reasons for this may be safety considerations, convenience, or simply "slack". Cognitive factors can also motivate multiple purchases of tools – which contribute to what has been labeled multiplicative growth in the introduction – with a similar effect of declining utilization rates of the single tools with rising income. The reasons

[10] See Weatherhill (1996, Chap. 2) for Britain in the eighteenth century and Lebergott (1993) for the U.S. in the twentieth. Durables and appliances are only the most obvious category of tools. Since all goods and services not qualifying as direct inputs are assessed as tools here, more recent sources like mail-order catalogues and department store inventory lists may be taken as even more striking evidence of the soaring number of such items supplied to consumption, see Payson (1994).

may be aesthetic judgements, e.g. in the case of furniture, social approval/status motiv or again safety considerations and convenience.

As in the case of direct inputs, a major source of a growing real per capita expenditure on tools is, however, the introduction of new products which simultaneously serve a combination of wants. Even though it is not satiation which the producers thus try to circumvent, but rather, on the cognitive level, the attempt to provide (new) reasons for justifying a purchasing decision, the effect on the growth of demand is very similar. Multi-purpose, multi-function tools may be more elaborate and, hence, higher expenses may appear acceptable. Yet, in many cases not all of the functions are actually utilized – which means that the realized utilization rate of the different functions may actually be much lower than for a specialized tool. In fact, some functions may be duplicated through the collection of multi-purpose, multi-function tools.

Following H.2, the growing importance of tools presupposes that the consumers' subjective consumption knowledge also has to grow. The general improvement in education over the past hundred years has been an important prerequisite for making more sophisticated consumption technologies intelligible, for disseminating information on the growing number of consumption opportunities, and thus for a growing consumption expenditure. More recently, the booming advertisement industry has been instrumental in enhancing consumer knowledge about available tools and the wants they are supposed to serve. In a world of information overflow, advertising is the producers' most important competitive method of drawing attention to goods and services which they have brought to the markets in their vicarious effort to identify consumer wants not yet sufficiently satisfied.

A truly dramatic effect on innovation possibilities and, hence, on the increasing variety of consumption items and consumption opportunities is, however, reflected in the learning processes suggested by H.3 and H.4. The formation of acquired wants usually adds new elements to already existing combinations of wants. In this way it provides motivation for additional tools to be continued. Many of the consumption items purchased today are tools which serve acquired wants which have not been there some hundred or two-hundred years ago, while most of the wants known at those times are still present today. The implications for demand growth are obvious. The refinement effect, and the specialization in consumption to which it leads, support the existence of a highly specialized supply on small scale basis. The eminently educated taste and musical skills of the opera lover keep expensive opera houses in business. At the same time, the wants and the secret knowledge of techno fans support an entire industry of scenic discos. Not to speak of the media making a living from both (and many more) kinds of specialized musical consumers' demands. There are plenty of similar examples of highly specialized consumerism – handcrafted jewelry, high-tech consumer electronics, sports equipments, arts and crafts – the list could be extended at will and, due to further innovation possibilities, is still expanding.

If the consumers in an economy increasingly specialize in their consumption this does, of course, not necessarily imply a growth of their demand over

time. Increasing specialization differentiates consumers and allows the overall variety of products and services in the economy to grow, but not necessarily real consumption expenditures. However, under conditions of constantly rising real wages as witnessed in the past century, specialization in consumption and the corresponding small scales of specialized production has contributed to a growing consumption expenditure. The reason is simply that production costs and, correspondingly, the prices of the respective specialized consumption items have been higher than those of non-differentiated products and services that could have been produced in much larger scale. Since that effect is the net result of two tendencies adverse to each other – that of retaining high-cost small scale production and that of competitive pressure on productivity increases even in small scale production – one cannot be certain that the effect will continue to drive up consumption expenditures, but it will certainly not work in the opposite direction.[11]

V Conclusions

The long term evolution of consumption and the growth of demand is difficult to explain on the basis of the rather sterile modern theory of preferences. In order to add substance, recourse has been made here to a classical notion in economics, the concept of wants. By developing the concept more systematically, conjectures have been proposed about what wants people pursue in their daily economic activities, wants they satisfy by consuming resources as direct inputs or as tools for serving these wants. Furthermore, some material hypotheses have been suggested on the way in which wants and the corresponding consumption knowledge change over time in a systematic way through learning and specialization. These hypotheses are informed by conjectures about the genetic basis of human behavior and some insights from behavioral and cognitive psychology. The implications briefly outlined provide an explanation for why, in spite of the historically unique growth of per capita income in the modern economies, consumption has not been increasingly satiated. A crucial role is played in this explanation by the increasing variety of consumption items offered in the markets on the basis of an increasing specialization of the consumers in their demand.

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[11] Moreover, its relevance for maintaining employment opportunities in the further growth of the economy should not be underrated. In the absence of any refinement of consumption knowledge and wants, the remaining non-specialized consumption items could be produced by a few suppliers with economies of scale that would render a large part of the workforce unemployed. In such a view, the demand side conditions accompanying economic growth may be more relevant for a proper understanding of the ever more enhanced division of labor and specialization in the growing economy than many supply side oriented growth theorists may be aware of.

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