De Gustibus Non Est Disputandum

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The venerable admonition not to quarrel over tastes is commonly interpreted as advice to terminate a dispute when it has been resolved into a difference of tastes, presumably because there is no further room for rational persuasion. Tastes are the unchallengeable axioms of a man's behavior: he may properly (usefully) be criticized for inefficiency in satisfying his desires, but the desires themselves are *data*. Deplorable tastes —say, for arson—may be countered by coercive and punitive action, but these deplorable tastes, at least when held by an adult, are not capable of being changed by persuasion.

Our title seems to us to be capable of another and preferable interpretation: that tastes neither change capriciously nor differ importantly between people. On this interpretation one does not argue over tastes for the same reason that one does not argue over the Rocky Mountains—both are there, will be there next year, too, and are the same to all men.

The difference between these two viewpoints of tastes is fundamental. On the traditional view, an explanation of economic phenomena that reaches a difference in tastes between people or times is the terminus of the argument: the problem is abandoned *at this point* to whoever studies and explains tastes (psychologists? anthropologists? phrenologists? sociobiologists?). On our preferred interpretation, one never reaches this impasse: the economist continues to search for differences in prices or incomes to explain any differences or changes in behavior.

The choice between these two views of the role of tastes in economic theory must ultimately be made on the basis of their comparative analytical productivities. On the conventional view of inscrutable, often capricious tastes, one drops the discussion as soon as the behavior of tastes becomes important—and turns his energies to other problems. On our view, one searches, often long and frustratingly, for the subtle forms that prices and incomes take in explaining differences among men and periods. If the latter approach yields more useful results, it is the proper choice. The establishment of the proposition that one may usefully treat tastes as stable over time and similar among people is the central task of this essay.

The ambitiousness of our agenda deserves emphasis: we are proposing the hypothesis that widespread and/or persistent human behavior can be explained by a generalized calculus of utility-maximizing behavior, without introducing the qualification "tastes remaining the same." It is a thesis that does not permit of direct proof because it is an assertion about the world, not a proposition in logic. Moreover, it is possible almost at random to throw up examples of phenomena that presently defy explanation by this hypothesis: Why do we have inflation? Why are there few Jews in farming?[1] Why are societies with polygynous families so rare in the modern era? Why aren't blood banks responsible for the quality of their product? If we could answer these questions to your satisfaction, you would quickly produce a dozen more.

What we assert is not that we are clever enough to make illuminating applications of utility-maximizing theory to all important phenomena—not even our entire generation of economists is clever enough to do that. Rather, we assert that this traditional approach of the

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[1]Our lamented friend Reuben Kessel offered an attractive explanation: since Jews have been persecuted so often and forced to flee to other countries, they have not invested in immobile land, but in mobile human capital—business skills, education, etc.—that would automatically go with them. Of course, someone might counter with the more basic query: but why are they Jews, and not Christians or Moslems?

economist offers guidance in tackling these problems—and that no other approach of remotely comparable generality and power is available.

To support our thesis we could offer samples of phenomena we believe to be usefully explained on the assumption of stable, well-behaved preference functions. Ultimately, this is indeed the only persuasive method of supporting the assumption, and it is legitimate to cite in support all of the existing corpus of successful economic theory. Here we shall undertake to give this proof by accomplishment a special and limited interpretation. We take categories of behavior commonly held to demonstrate changes in tastes or to be explicable only in terms of such changes, and show both that they are reconcilable with our assumption of stable preferences and that the reformulation is illuminating.

I. The New Theory of Consumer Choice

The power of stable preferences and utility maximization in explaining a wide range of behavior has been significantly enhanced by a recent reformulation of consumer theory.[2] This reformulation transforms the family from a passive maximizer of the utility from market purchases into an active maximizer also engaged in extensive production and investment activities. In the traditional theory, households maximize a utility function of the goods and services bought in the marketplace, whereas in the reformulation they maximize a utility function of objects of choice, called commodities, that they produce with market goods, their own time, their skills, training and other human capital, and other inputs. Stated formally, a household seeks to maximize

$$U = U(Z_1, \ldots Z_m) \tag{1}$$

with

$$Z_i = f_i(X_{1i}, \ldots X_{ki}, t_{1i}, \ldots t_{\ell i}, S_1, \ldots S_\ell, Y_i),\ i = 1 \ldots m \tag{2}$$

where Z_i are the commodity objects of choice entering the utility function, f_i is the production function for the ith commodity, X_{ji} is the quantity of the jth market good or service used in the production of the ith commodity, t_{ji} is the jth person's own time input, S_j the jth person's human capital, and Y_i represents all other inputs.

The Z_i have no market prices since they are not purchased or sold, but do have "shadow" prices determined by their costs of production. If f_i were homogeneous of the first degree in the X_{ji} and t_{ji}, marginal and average costs would be the same and the shadow price of Z_i would be

$$\pi_i = \sum_{j=1}^{k} \alpha_{ji}\left(\frac{p}{w_1}, \frac{w}{w_1}, S, Y_i\right) p_j + \sum_{j=1}^{l} \beta_{ji}\left(\frac{p}{w_1}, \frac{w}{w_1}, S, Y_i\right) w_j \tag{3}$$

where p_j is the cost of X_j, w_j is the cost of t_j, and α_{ji} and β_{ji} are input-output coefficients that depend on the (relative) set of p and w, S, and Y_i. The numerous and varied determinants of these shadow prices give concrete expression to our earlier statement about the subtle forms that prices take in explaining differences among men and periods.

The real income of a household does not simply equal its money income deflated by an index of the prices of market goods, but equals its full income (which includes the value of "time" to the household)[3] deflated by an index of the prices, π_i, of the produced commodities. Since full income and commodity prices depend on a variety of factors, incomes also take subtle forms. Our task in this paper is to spell out some of the forms prices and full income take.

II. Stability of Tastes and "Addiction"

Tastes are frequently said to change as a result of consuming certain "addictive" goods. For example, smoking of cigarettes, drinking of alcohol, injection of heroin, or close contact with some persons over an appreciable period of

[2]An exposition of this reformulation can be found in Robert Michael and Becker. This exposition emphasizes the capacity of the reformulation to generate many implications about behavior that are consistent with stable tastes.

[3]Full income is the maximum money income that a household could achieve by an appropriate allocation of its time and other resources.

time, often increases the desire (creates a craving) for these goods or persons, and thereby cause their consumption to grow over time. In utility language, their marginal utility is said to rise over time because tastes shift in their favor. This argument has been clearly stated by Alfred Marshall when discussing the taste for "good" music:

> There is however an implicit condition in this law [of diminishing marginal utility] which should be made clear. It is that we do not suppose time to be allowed for any alteration in the character or tastes of the man himself. It is therefore no exception to the law that the more good music a man hears, the stronger is his taste for it likely to become . . . [p. 94]

We believe that the phenomenon Marshall is trying to explain, namely that exposure to good music increases the subsequent demand for good music (for some persons!), can be explained with some gain in insight by assuming constant tastes, whereas to assume a change in tastes has been an unilluminating "explanation." The essence of our explanation lies in the accumulation of what might be termed "consumption capital" by the consumer, and we distinguish "beneficial" addiction like Marshall's good music from "harmful" addiction like heroin.

Consider first beneficial addiction, and an unchanging utility function that depends on two produced commodities:

$$U = U(M, Z) \tag{4}$$

where M measures the amount of music "appreciation" produced and consumed, and Z the production and consumption of other commodities. Music appreciation is produced by a function that depends on the time allocated to music (t_m), and the training and other human capital conducive to music appreciation (S_m) (other inputs are ignored):

$$M = M_m(t_m, S_m) \tag{5}$$

We assume that

$$\frac{\partial M_m}{\partial t_m} > 0, \quad \frac{\partial M_m}{\partial S_m} > 0$$

and also that

$$\frac{\partial^2 M_m}{\partial t_m \partial S_m} > 0$$

An increase in this music capital increases the productivity of time spent listening to or devoted in other ways to music.

In order to analyze the consequences for its consumption of "the more good music a man hears," the production and consumption of music appreciation has to be dated. The amount of appreciation produced at any moment j, M_j, would depend on the time allocated to music and the music human capital at j: t_{m_j} and S_{m_j}, respectively. The latter in turn is produced partly through "on-the-job" training or "learning by doing" by accumulating the effects of earlier music appreciation:

$$S_{m_j} = h(M_{j-1}, M_{j-2} \ldots, E_j) \tag{6}$$

By definition, the addiction is beneficial if

$$\frac{\partial S_{m_j}}{\partial M_{j-v}} > 0, \text{ all } v \text{ in (6)}$$

The term E_j measures the effect of education and other human capital on music appreciation skill, where

$$\frac{\partial S_{m_j}}{\partial E_j} > 0$$

and probably

$$\frac{\partial^2 S_{m_j}}{\partial M_{j-v} \partial E_j} > 0$$

We assume for simplicity a utility function that is a discounted sum of functions like the one in equation (4), where the M and Z commodities are dated, and the discount rate determined by time preference.[4] The optimal allocation of consumption is determined from the equality between the ratio of their marginal utilities and the ratio of their shadow prices:

$$\frac{MU_{m_j}}{MU_{z_j}} = \frac{\partial U}{\partial M_j} \Big/ \frac{\partial U}{\partial Z_j} = \frac{\pi_{m_j}}{\pi_{z_j}} \tag{7}$$

The shadow price equals the marginal cost of adding a unit of commodity output. The marginal cost is complicated for music appreciation M by the positive effect on subsequent music human capital of the production of music

[4] A consistent application of the assumption of stable preferences implies that the discount rate is zero; that is, the absence of time preference (see the brief discussion in Section VI.)

appreciation at any moment j. This effect on subsequent capital is an investment return from producing appreciation at j that reduces the cost of production at j. It can be shown that the marginal cost at j equals[5]

$$(8)\qquad \pi_{m_j} = \frac{w\partial t_{m_j}}{\partial M_j} - w\sum_{i=1}^{n-j}\frac{\partial M_{j+i}}{\partial S_{m_{j+i}}}\Big/\frac{\partial M_{j+i}}{\partial t_{mj+i}} \cdot \frac{dS_{m_{j+i}}}{dM_j}\cdot\frac{1}{(i+r)^i}$$

$$= \frac{w\partial t_{m_j}}{\partial M_j} - A_j = \frac{w}{MP_{t_{m_j}}} - A_j$$

where w is the wage rate (assumed to be the same at all ages), r the interest rate, n the length of life, and A_j the effect of addiction, measures the value of the saving in future time inputs from the effect of the production of M in j on subsequent music capital.

With no addiction, $A_j = 0$ and equation (8) reduces to the familiar marginal cost formula. Moreover, A_j is positive as long as music is beneficially addictive, and tends to decline as j increases, approaching zero as j approaches n. The term w/MP_{t_m} declines with age for a given time input as long as music capital grows with age. The term A_j may not change so much with age at young ages because the percentage decline in the number of remaining years is small at these ages. Therefore, π_m would tend to decline with age at young ages because the effect on the marginal product of the time input would tend to dominate the effect on A. Although π_m might not always decline at other ages, for the present we assume that π_m declines continuously with age.

If π_z does not depend on age, the relative price of music appreciation would decline with age; then by equation (7), the relative consumption of music appreciation would rise with age. On this interpretation, the (relative) consumption of music appreciation rises with exposure not because tastes shift in favor of music, but because its shadow price falls as skill and experience in the appreciation of music are acquired with exposure.

An alternative way to state the same analysis is that the marginal utility of time allocated to music is increased by an increase in the stock of music capital.[6] Then the consumption of music appreciation could be said to rise with exposure because the marginal utility of the time spent on music rose with exposure, even though tastes were unchanged.

The effect of exposure on the accumulation of music capital might well depend on the level of education and other human capital, as indicated by equation (6). This would explain why educated persons consume more "good" music (i.e., music that educated people like!) than

[5]The utility function

$$V = \sum_{j=1}^{n} a^j U(M_j, Z_j)$$

is maximized subject to the constraints

$$M_j = M(t_{m_j}, S_{m_j});\ Z_j = Z(x_j, t_{z_j})$$

$$S_{m_j} = h(M_{j-1}, M_{j-2}, \ldots, E_j)$$

$$\sum \frac{px_j}{(1+r)^j} = \sum \frac{wt_{wj} + b_j}{(i+r)^j}$$

and $t_{w_j} + t_{m_j} + t_{z_j} = t$,

where t_{w_j} is hours worked in the jth period, and b_j is property income in that period. By substitution one derives the full wealth constraint:

$$\sum \frac{px_j + w(t_{m_j} + t_{z_j})}{(1+r)^j} = \sum \frac{wt + b_j}{(1+r)^j} = W$$

Maximization of V with respect to M_j and Z_j subject to the production functions and the full wealth constraint gives the first-order conditions

$$a^j\frac{\partial U}{\partial Z_j} = \frac{\lambda}{(1+r)^j}\left(\frac{pdx_j}{dZ_j} + \frac{wdt_{z_j}}{dZ_j}\right) = \frac{\lambda}{(1+r)^j}\pi_{z_j}$$

$$a^j\frac{\partial U}{\partial M_j} = \frac{\lambda}{(1+r)^j}\cdot\left(\frac{w\partial t_{m_j}}{\partial M_j} + \sum_{i=1}^{n-j}\frac{wdt_{m_{j+i}}}{dM_j}\cdot\frac{1}{(1+r)^i}\right)$$

$$= \frac{\lambda}{(1+r)^j}\pi_{m_j}$$

Since, however,

$$\frac{dM_{j+i}}{dM_j} = 0 = \frac{\partial M_{j+i}}{\partial S_{m_{j+i}}}\frac{dS_{m_{j+i}}}{dM_j} + \frac{\partial M_{j+i}}{\partial t_{m_{j+i}}}\frac{dt_{m_{j+i}}}{dM_j}$$

then

$$\frac{dt_{m_{j+1}}}{dM_j} = -\frac{\partial M_{j+i}}{\partial S_{m_{j+i}}}\Big/\frac{\partial M_{j+i}}{\partial t_{m_{j+i}}}\cdot\frac{dS_{m_{j+i}}}{dM_j}$$

By substitution into the definition of π_{m_j}, equation (8) follows immediately.

[6]The marginal utility of time allocated to music at j includes the utility from the increase in the future stock of music capital that results from an increase in the time allocated at j. An argument similar to the one developed for the price of music appreciation shows that the marginal utility of time would tend to rise with age, at least at younger ages.

other persons do.

Addiction lowers the price of music appreciation at younger ages without any comparable effect on the productivity of the time spent on music at these ages. Therefore, addiction would increase the time spent on music at younger ages: some of the time would be considered an investment that increases future music capital. Although the price of music tends to fall with age, and the consumption of music tends to rise, the time spent on music need not rise with age because the growth in music capital means that the consumption of music could rise even when the time spent fell with age. The time spent would be more likely to rise, the more elastic the demand curve for music appreciation. We can express this result in a form that will strike many readers as surprising; namely, that the time (or other inputs) spent on music appreciation is more likely to be addictive—that is, to rise with exposure to music—the more, not less, elastic is the demand curve for music appreciation.

The stock of music capital might fall and the price of music appreciation rise at older ages because the incentive to invest in future capital would decline as the number of remaining years declined, whereas the investment required simply to maintain the capital stock intact would increase as the stock increased. If the price rose, the time spent on music would fall if the demand curve for music were elastic. Consequently, our analysis indicates that the observed addiction to music may be stronger at younger than at older ages.

These results for music also apply to other commodities that are beneficially addictive. Their prices fall at younger ages and their consumption rises because consumption capital is accumulated with exposure and age. The time and goods used to produce an addictive commodity need not rise with exposure, even though consumption of the commodity does; they are more likely to rise with exposure, the more elastic is the demand curve for the commodity. Even if they rose at younger ages, they might decline eventually as the stock of consumption capital fell at older ages.

Using the same arguments developed for beneficial addiction, we can show that all the results are reversed for harmful addiction,[7] which is defined by a negative sign of the derivatives in equation (6):

$$\frac{\partial S_j}{\partial H_{j-v}} < 0, \text{ all } v \text{ in (6)} \tag{9}$$

where H is a harmfully addictive commodity. An increase in consumption at any age reduces the stock of consumption capital available subsequently, and this raises the shadow price at all ages.[8] The shadow price would rise with age and exposure, at least at younger ages, which would induce consumption to fall with age and exposure. The inputs of goods and time need not fall with exposure, however, because consumption capital falls with exposure; indeed, the inputs are likely to rise with exposure if the commodity's demand curve were inelastic.

To illustrate these conclusions, consider the commodity "euphoria" produced with input of heroin (or alcohol or amphetamines.) An increase in the consumption of current euphoria raises the cost of producing euphoria in the future by reducing the future stock of "euphoric capital." The effect of exposure to euphoria on the cost of producing future euphoria reduces the consumption of euphoria as exposure continues. If the demand curve for euphoria were sufficiently inelastic, however, the use of heroin would grow with exposure at the same time that euphoria fell.

Note that the amount of heroin used at younger ages would be reduced because of the negative effect on later euphoric capital. Indeed, no heroin at all might be used only because the harmfully addictive effects are anticipated, and discourage any use. Note further that if heroin

[7]In some ways, our analysis of beneficial and harmful addiction is a special case of the analysis of beneficial and detrimental joint production in Michael Grossman.

[8]Instead of equation (8), one has

$$\pi_{h_j} = \frac{w}{MP_{t_j}} + A_j$$

where $A_j \geq 0$

were used even though the subsequent adverse consequences were accurately anticipated, the utility of the user would be greater than it would be if he were prevented from using heroin. Of course, his utility would be still greater if technologies developed (methadone?) to reduce the harmfully addictive effects of euphoria.[9]

Most interestingly, note that the use of heroin would grow with exposure at the same time that the amount of euphoria fell, if the demand curve for euphoria and thus for heroin were sufficiently inelastic. That is, addiction to heroin—a growth in use with exposure—is the *result* of an inelastic demand for heroin, *not,* as commonly argued, the *cause* of an inelastic demand. In the same way, listening to music or playing tennis would be addictive if the demand curves for music or tennis appreciation were sufficiently elastic; the addiction again is the result, not the cause, of the particular elasticity. Put differently, if addiction were surmised (partly because the input of goods or time rose with age), but if it were not clear whether the addiction were harmful or beneficial, the elasticity of demand could be used to distinguish between them: a high elasticity suggests beneficial and a low elasticity suggests harmful addiction.[10]

We do not have to assume that exposure to euphoria changes tastes in order to understand why the use of heroin grows with exposure, or why the amount used is insensitive to changes in its price. Even with constant tastes, the amount used would grow with exposure, and heroin is addictive precisely *because* of the insensitivity to price changes.

An exogenous rise in the price of addictive goods or time, perhaps due to an excise tax, such as the tax on cigarettes and alcohol, or to restrictions on their sale, such as the imprisonment of dealers in heroin, would have a relatively small effect on their use by addicts if these are harmfully addictive goods, and a relatively large effect if they are beneficially addictive. That is, excise taxes and imprisonment mainly transfer resources away from addicts if the goods are harmfully addictive, and mainly reduce the consumption of addicts if the goods are beneficially addictive.

The extension of the capital concept to investment in the capacity to consume more efficiently has numerous other potential applications. For example, there is a fertile field in consumption capital for the application of the theory of division of labor among family members.

III. Stability of Tastes and Custom and Tradition

A "traditional" qualification to the scope of economic theory is the alleged powerful hold over human behavior of custom and tradition. An excellent statement in the context of the behavior of rulers is that of John Stuart Mill:

> It is not true that the actions even of average rulers are wholly, or anything approaching to wholly, determined by their personal interest, or even by their own opinion of their personal interest. . . . I insist only on what is true of all rulers, viz., that the character and course of their actions is largely influenced (independently of personal calculations) by the habitual sentiments and feelings, the general modes of thinking and acting, which prevail throughout the community of which they are members; as well as by the feelings, habits, and modes of thought which characterize the particular class in that community to which they themselves belong. . . . They are also much influenced by the maxims and traditions which have descended to them from other rulers, their predecessors; which maxims and traditions have been known to retain an ascendancy during long periods, even

[9]That is, if new technology reduced and perhaps even changed the sign of the derivatives in equation (9). We should state explicitly, to avoid any misunderstanding, that "harmful" means only that the derivatives in (9) are negative, and not that the addiction harms others, nor, as we have just indicated, that it is unwise for addicts to consume such commodities.

[10]The elasticity of demand can be estimated from the effects of changes in the prices of inputs. For example, if a commodity's production function were homogeneous of degree one, and if all its future as well as present input prices rose by the same known percentage, the elasticity of demand for the commodity could be estimated from the decline in the inputs. Therefore the distinction between beneficial and harmful addiction is operational: these independently estimated commodity elasticities could be used, as in the text, to determine whether an addiction was harmful or beneficial.

> in opposition to the private interests of the rulers for the time being. [p. 484]

The specific political behavior that contradicts "personal interest" theories is not clear from Mill's statement, nor is it much clearer in similar statements by others applied to firms or households. Obviously, stable behavior by (say) households faced with stable prices and incomes —or more generally a stable environment—is no contradiction since stability then is implied as much by personal interest theories as by custom and tradition. On the other hand, stable behavior in the face of changing prices and incomes might contradict the approach taken in this essay that assumes utility maximizing with stable tastes.

Nevertheless, we believe that our approach better explains when behavior is stable than do approaches based on custom and tradition, and can at the same time explain how and when behavior does change. Mill's "habits and modes of thought," or his "maxims and traditions which have descended," in our analysis result from investment of time and other resources in the accumulation of knowledge about the environment, and of skills with which to cope with it.

The making of decisions is costly, and not simply because it is an activity which some people find unpleasant. In order to make a decision one requires information, and the information must be analyzed. The costs of searching for information and of applying the information to a new situation are such that habit is often a more efficient way to deal with moderate or temporary changes in the environment than would be a full, apparently utility-maximizing decision. This is precisely the avoidance of what J. M. Clark termed the irrational passion for dispassionate rationality.

A simple example of economizing on information by the habitual purchase from one source will illustrate the logic. A consumer buys one unit of commodity X in each unit of time. He pays a price p_t at a time t. The choices he faces are:

1. To search at the time of an act of purchase to obtain the lowest possible price $\hat{p}_t$ consistent with the cost of search. Then $\hat{p}_t$ is a function of the amount of search s (assumed to be the same at each act of purchase):

$$\hat{p}_t = f(s),\ f'(s) < 0 \tag{10}$$

where the total cost of s is $C(s)$.

2. To search less frequently (but usually more intensively), relying between searches upon the outcome of the previous search in choosing a supplier. Then the price p_t will be higher (relative to the average market price), the longer the period since the previous search (at time t_0),

$$p_t = g(t - t_0),\ g' > 0$$

Ignoring interest, the latter method of purchase will have a total cost over period T determined by

1) K searches (all of equal intensity) at cost $K\,C(s)$.

2) Each search lasts for a period T/K, within which $r = T/K$ purchases are made, at cost $r\,\bar{p}$, where $\bar{p}$ is the average price. Assume that the results of search "depreciate" (prices appreciate) at rate δ. A consumer minimizes his combined cost of the commodity and search over the total time period; the minimizing condition is[11]

[11]The price of the ith purchase within one of the K search periods is $p_i = \hat{p}(1+\delta)^{i-1}$. Hence

$$\bar{p} = \frac{1}{r}\sum_{i=1}^{r}\hat{p}\,(1+\delta)^{i-1} = \hat{p}\,\frac{(1+\delta)^r - 1}{r\delta}$$

The total cost to be minimized is

$$TC = Kr\bar{p} + KC(s) = K\hat{p}\,\frac{(1+\delta)^r - 1}{\delta} + KC$$

By taking a second-order approximation to $(1+\delta)^r$, we get

$$TC = T\left\{\hat{p}\left[1 + \frac{(r-1)\delta}{2}\right] + \frac{C}{r}\right\}$$

Minimizing with respect to r gives

$$\frac{\partial TC}{\partial r} = 0 = T\left(\frac{\hat{p}\delta}{2} - \frac{C}{r^2}\right)$$

or

$$r = \sqrt{\frac{2C}{\delta\hat{p}}}$$

$$r = \sqrt{\frac{2C}{\delta\hat{p}}} \tag{11}$$

In this simple model with r purchases between successive searches, r is larger the larger the amount spent on search per dollar spent on the commodity $(C/\hat{p})$, and the lower the rate of appreciation of prices (δ). If there were full search on each individual act of purchase, the total cost could not be less than the cost when the optimal frequency of search was chosen, and might be much greater.

When a temporary change takes place in the environment, perhaps in prices or income, it generally would not pay to disinvest the capital embodied in knowledge or skills, or to accumulate different types of capital. As a result, behavior will be relatively stable in the face of temporary changes.

A related situation arises when an unexpected change in the environment does not induce a major response immediately because time is required to accumulate the appropriate knowledge and skills. Therefore, stable preferences combined with investment in "specific" knowledge and skills can explain the small or "inelastic" responses that figure so prominently in short-run demand and supply curves.

A permanent change in the environment, perhaps due to economic development, usually causes a greater change in the behavior of young than of old persons. The common interpretation is that young persons are more readily seduced away from their customs and traditions by the glitter of the new (Western?) environment. On our interpretation, young and old persons respond differently, even if they have the same preferences and motivation. To change their behavior drastically, older persons have to either disinvest their capital that was attuned to the old environment, or invest in capital attuned to the new environment. Their incentive to do so may be quite weak, however, because relatively few years remain for them to collect the returns on new investments, and much human capital can only be disinvested slowly.

Young persons, on the other hand, are not so encumbered by accumulations of capital attuned to the old environment. Consequently, they need not have different preferences or motivation or be intrinsically more flexible in order to be more affected by a change in the environment: they simply have greater incentive to invest in knowledge and skills attuned to the new environment.

Note that this analysis is similar to that used in the previous section to explain addictive behavior: utility maximization with stable preferences, conditioned by the accumulation of specific knowledge and skills. One does not need one kind of theory to explain addictive behavior and another kind to explain habitual or customary behavior. The same theory based on stable preferences can explain both types of behavior, and can accommodate both habitual behavior and the departures therefrom.

IV. Stability of Tastes and Advertising

Perhaps the most important class of cases in which "change of tastes" is invoked as an explanation for economic phenomena is that involving advertising. The advertiser "persuades" the consumer to prefer his product, and often a distinction is drawn between "persuasive" and "informative" advertising.[12] John Kenneth Galbraith is the most famous of the economists who argue that advertising molds consumer tastes:

> These [institutions of modern advertising and salesmanship] cannot be reconciled with the notion of independently determined desires for their central function is to create desires—to bring into being wants that previously did not exist. This is accomplished by the producer of the goods or at his behest.—Outlays for the manufacturing of a product are not more important in the strategy of modern business enterprise than outlays for the manufacturing of demand for the product. [pp. 155–56]

[12]The distinction, if in fact one exists, between persuasive and informative advertising must be one of purpose or effect, not of content. A simple, accurately stated fact ("I offer you this genuine $1 bill for 10 cents") can be highly persuasive; the most bizarre claim ("If Napoleon could have bought our machine gun, he would have defeated Wellington") contains some information (machine guns were not available in 1814).

We shall argue, in direct opposition to this view, that it is neither necessary nor useful to attribute to advertising the function of changing tastes.

A consumer may indirectly receive utility from a market good, yet the utility depends not only on the quantity of the good but also the consumer's knowledge of its true or alleged properties. If he does not know whether the berries are poisonous, they are not food; if he does not know that they contain vitamin C, they are not consumed to prevent scurvy. The quantity of information is a complex notion: its degree of accuracy, its multidimensional properties, its variable obsolescence with time are all qualities that make direct measurement of information extremely difficult.

How can this elusive variable be incorporated into the theory of demand while preserving the stability of tastes? Our approach is to continue to assume, as in the previous sections, that the ultimate objects of choice are commodities produced by each household with market goods, own time, *knowledge*, and perhaps other inputs. We now assume, in addition, that the knowledge, whether real or fancied, is produced by the advertising of producers and perhaps also the own search of households.

Our approach can be presented through a detailed analysis of the simple case where the output x of a particular firm and its advertising A are the inputs into a commodity produced and consumed by households; for a given household:

$$Z = f(x, A, E, y) \tag{12}$$

where $\partial Z/\partial x > 0$, $\partial Z/\partial A > 0$, E is the human capital of the houshold that affects these marginal products, and y are other variables, possibly including advertising by other firms. Still more simply,

$$Z = g(A, E, y)x \tag{13}$$

where $\partial g/\partial A = g' > 0$ and $\partial^2 g/\partial A^2 < 0$. With A, E, and y held constant, the amount of the commodity produced and consumed by any household is assumed to be proportional to the amount of the firm's output used by that household.[13] If the advertising reaching any household were independent of its behavior, the shadow price of Z, the marginal cost of x, would simply be the expenditure on x required to change Z by one unit. From equation (13), that equals

$$\pi_z = \frac{p_x}{g} \tag{14}$$

where p_x is the price of x.

An increase in advertising may lower the commodity price to the household (by raising g), and thereby increase its demand for the commodity and change its demand for the firm's output, because the household is made to believe—correctly or incorrectly—that it gets a greater output of the commodity from a given input of the advertised product. Consequently, advertising affects consumption in this formulation not by changing tastes, but by changing prices. That is, a movement along a stable demand curve for commodities is seen as generating the apparently unstable demand curves of market goods and other inputs.

More than a simple change in language is involved: our formulation has quite different implications from the conventional ones. To develop these implications, consider a firm that is determining its optimal advertising along with its optimal output. We assume initially that the commodity indirectly produced by this firm (equation (12)) is a perfect substitute to consumers for commodities indirectly produced by many other firms. Therefore, the firm is perfectly competitive in the commodity market, and could (indirectly) sell an unlimited amount of this commodity at a fixed commodity price. Observe that a firm can have many perfect substitutes in the commodity market even though few other firms produce the same physical product. For example, a firm may be the sole designer of jewelry that contributes to the social prestige of consumers, and yet compete fully with many other products that also contribute to prestige: large automobiles, expensive furs, fashionable clothing, elaborate parties, a respected occupation, etc.

If the level of advertising were fixed, there would be a one-to-one correspondence between the price of the commodity and the price of the firm's output (see equation (14)). If π_z were

[13] Stated differently, Z is homogeneous of the first degree in x alone.

given by the competitive market, p_x would then also be given, and the firm would find its optimal output in the conventional way by equating marginal cost to the given product price. There is no longer such a one-to-one correspondence between π_z and p_x, however, when the level of advertising is also a variable, and even a firm faced with a fixed commodity price in a perfectly competitive commodity market could sell its product at different prices by varying the level of advertising. Since an increase in advertising would increase the commodity output that consumers receive from a given amount of this firm's product, the price of its product would then be increased relative to the fixed commodity price.

The optimal advertising, product price, and output of the firm can be found by maximizing its income

$$I = p_x X - TC(X) - Ap_a \tag{15}$$

where X is the firm's total output, TC its costs of production other than advertising, and p_a the (constant) cost of a unit of advertising. By substituting from equation (14), I can be written as

$$I = \pi_z^0 g(A)X - TC(X) - Ap_a \tag{15'}$$

where π_z^0 is the given market commodity price, the advertising-effectiveness function (g) is assumed to be the same for all consumers,[14] and the variables E and y in g are suppressed. The first-order maximum conditions with respect to X and A are

$$p_x = \pi_z^0 g = MC(X) \tag{16}$$

$$\frac{\partial p_x}{\partial A} X = \pi_z^0 X g' = p_a \tag{17}$$

Equation (16) is the usual equality between price and marginal cost for a competitive firm, which continues to hold when advertising exists and is a decision variable. Not surprisingly, equation (17) says that marginal revenue and marginal cost of advertising are equal, where marginal revenue is determined by the level of output and the increase in product price "induced" by an increase in advertising. Although the commodity price is fixed, an increase in advertising increases the firm's product price by an amount that is proportional to the increased capacity (measured by g') of its product to contribute (at least in the minds of consumers) to commodity output.

In the conventional analysis, firms in perfectly competitive markets gain nothing from advertising and thus have no incentive to advertise because they are assumed to be unable to differentiate their products to consumers who have perfect knowledge. In our analysis, on the other hand, consumers have imperfect information, including misinformation, and a skilled advertiser might well be able to differentiate his product from other apparently similar products. Put differently, advertisers could increase the value of their output to consumers without increasing to the same extent the value of the output even of perfect competitors in the *commodity* market. To simplify, we assume that the value of competitors' output is unaffected, in the sense that the commodity price (more generally, the commodity demand curve) to any firm is not affected by its advertising. Note that when firms in perfectly competitive commodity markets differentiate their products by advertising, they still preserve the perfect competition in these markets. Note moreover, that if different firms were producing the same physical product in the same competitive commodity market, and had the same marginal cost and advertising-effectiveness functions, they would produce the same output, charge the same product price, and advertise at the same rate. If, however, either their marginal costs or advertising-effectiveness differed, they would charge different product prices, advertise at different rates, and yet still be perfect competitors (although not of one another)!

Not only can firms in perfectly competitive commodity markets—that is, firms faced with infinitely elastic commodity demand curves—have an incentive to advertise, but the incentive may actually be greater, the more competitive the commodity market is. Let us consider the

[14] Therefore, $p_x X = \pi_z^0 g \sum_{i=1}^{n} x_i$

where n is the number of households.

case of a finite commodity demand elasticity.

The necessary conditions to maximize income given by equation (15′), if π_z varies as a function of Z, are

$$(18)\quad \frac{\partial I}{\partial X} = \pi_z g + X\frac{\partial \pi_z}{\partial Z}\frac{\partial Z}{\partial X}g - MC(X) = 0,$$

or since $Z = gX$, and $\partial Z/\partial X = g$,

$$(18')\quad \pi_z g\left(1 + \frac{1}{\epsilon_{\pi_z}}\right) = p_x\left(1 + \frac{1}{\epsilon_{\pi_z}}\right) = MC(X)$$

where ϵ_{π_z} is the elasticity of the firm's commodity demand curve. Also

$$(19)\quad \frac{\partial I}{\partial A} = X\frac{\partial p_x}{\partial A} - p_a = \pi_z\frac{\partial Z}{\partial A} + \frac{\partial \pi_z}{\partial Z}\cdot\frac{\partial Z}{\partial A}\cdot Z - p_a = 0$$

or

$$(19')\quad X\frac{\partial p_x}{\partial A} = \pi_z g' X\left(1 + \frac{1}{\epsilon_{\pi_z}}\right) = p_a$$

Equation (18′) is simply the usual maximizing condition for a monopolist that continues to hold when there is advertising.[15] Equation (19′) clearly shows that, given $\pi_z g' X$, the marginal revenue from additional advertising is greater, the greater is the elasticity of the commodity demand curve; therefore, the optimal level of advertising would be positively related to the commodity elasticity.

This important result can be made intuitive by considering Figure 1. The curve DD gives the firm's commodity demand curve, where π_z is measured along the vertical and commodity output Z along the horizontal axis. The firm's production of X is held fixed so that Z varies only because of variations in the level of advertising. At point e^0, the level of advertising is A_0, the product price is p_x^0, and commodity

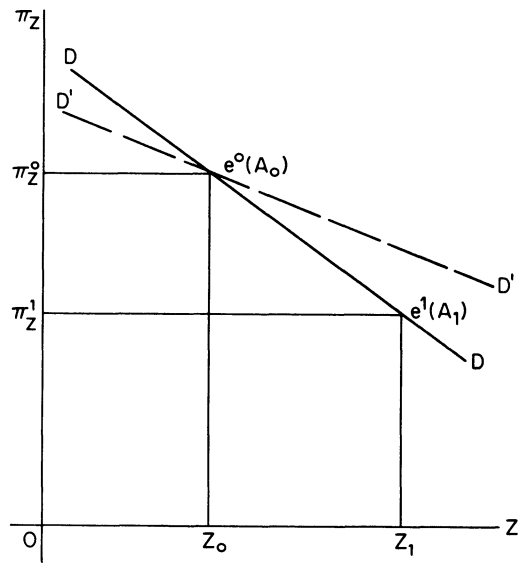

FIGURE 1

output and price are Z_0 and π_z^0, respectively. An increase in advertising to A_1 would increase Z to Z_1 (the increase in Z is determined by the given g' function). The decline in π_z induced by the increase in Z would be negatively related to the elasticity of the commodity demand curve: it would be less, for example, if the demand curve were $D'D'$ rather than DD. Since the increase in p_x is negatively related to the decline in π_z,[16] the increase in p_x, and thus the marginal revenue from the increase in A, is directly related to the elasticity of the commodity demand curve.[17]

The same result is illustrated with a more con-

[15] If the level of advertising is held constant, Z is proportional to X, so

$$\epsilon_{\pi_z} = \frac{dZ}{Z}\Big/\frac{d\pi_z}{\pi_z} = \epsilon_{p_x} = \frac{dX}{X}\Big/\frac{dp_x}{p_x}$$

[16] Since $\pi_z g = p_x$,

$$\frac{\partial p_x}{\partial A} = \pi_z g' + g\frac{\partial \pi_z}{\partial A} > 0$$

The first term on the right is positive and the second term is negative. If g, g', and π_z are given, $\partial p_x/\partial A$ is linearly and negatively related to $\partial \pi_z/\partial A$.

[17] Recall again our assumption, however, that even firms in perfectly competitive markets can fully differentiate their products. If the capacity of a firm to differentiate itself were inversely related to the elasticity of its commodity demand curve, that is, to the amount of competition in the commodity market, the increase in its product price generated by its advertising might not be directly related to the elasticity of its commodity demand curve.

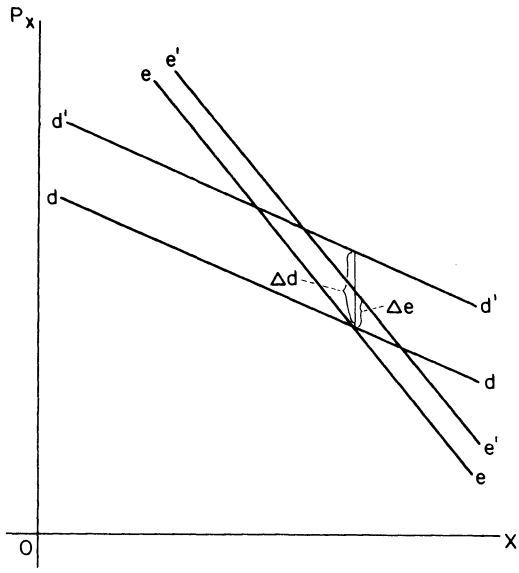

FIGURE 2

ventional diagram in Figure 2: the firm's product output and price are shown along the horizontal and vertical axes. The demand curve for its product with a given level of advertising is given by *dd*. We proved earlier (fn. 15) that with advertising constant, the elasticity of the product demand curve is the same as the elasticity of its commodity demand curve. An increase in advertising "shifts" the product demand curve upward to $d'd'$, and the marginal revenue from additional advertising is directly related to the size of the shift; that is, to the increase in product price for any given product output. Our basic result is that the shift is itself directly related to the elasticity of the demand curve. For example, with the same increase in advertising, the shift is larger from *dd* to $d'd'$ than from *ee* to $e'e'$ because *dd* is more elastic than *ee*.

This role of information in consumer demand is capable of extension in various directions. For example, the demand for knowledge is affected by the formal education of a person, so systematic variations of demand for advertisements with formal education can be explored. The stock of information possessed by the individual is a function of his age, period of residence in a community, and other variables, so systematic patterns of purchase of heavily and lightly advertised goods are implied by the theory.

V. Fashions and Fads

The existence of fashions and fads (short episodes or cycles in the consumption habits of people) seems an especially striking contradiction of our thesis of the stability of tastes. We find fashions in dress, food, automobiles, furniture, books, and even scientific doctrines.[18] Some are modest in amplitude, or few in their followers, but others are of violent amplitude: who now buys an ouija board, or a bustle? The rise and fall of fashions is often attributed to the fickleness of people's tastes. Herbert Blumer, the distinguished sociologist, gave a characteristic expression of this view:

> Tastes are themselves a product of experience, they usually develop from an initial state of vagueness to a state of refinement and stability, but once formed they may decay and disintegrate. . . .
>
> The fashion process involves both a formation and an expression of collective taste in the given area of fashion. The taste is intially a loose fusion of vague inclinations and dissatisfactions that are aroused by new experience in the field of fashion and in the larger surrounding world. In this initial state, collective taste is amorphous, inarticulate, and awaiting specific direction. Through models and proposals, fashion innovators sketch possible lines along which the incipient taste may gain objective expression and take definite form. [p. 344]

The obvious method of reconciling fashion with our thesis is to resort again to the now familiar argument that people consume commodities, and only indirectly do they consume market goods, so fashions in market goods are compatible with stability in the utility function of commodities. The task here, as elsewhere, is to show that this formulation helps to illuminate our understanding of the phenomena under dis-

[18] "Fashion" indeed, does not necessarily refer only to the shorter term preferences. Adam Smith says that the influence of fashion "over dress and furniture is not more absolute than over architecture, poetry, and music" (p. 283).

cussion; we have some tentative comments in this direction.

The commodity apparently produced by fashion goods is social distinction: the demonstration of alert leadership, or at least not lethargy, in recognizing and adopting that which will in due time be widely approved. This commodity—it might be termed *style*—sounds somewhat circular, because new things appear to be chosen simply because they are new. Such circularity is no more peculiar than that which is literally displayed in a race—the runners obviously do not run around a track in order to reach a new destination. Moreover, it is a commendation of a style good that it be superior to previous goods, and style will not be sought intentionally through less functional goods. Indeed, if the stylish soon becomes inferior to the unstylish, it would lose its attractiveness.

Style, moreover, is not achieved simply by change: the newness must be of a special sort that requires a subtle prediction of what will be approved novelty, and a trained person can make better predictions than an untrained person. Style is social rivalry, and it is, like all rivalry, both an incentive to individuality and a source of conformity.

The areas in which the rivalry of fashion takes place are characterized by public exposure and reasonably short life. An unexposed good (automobile pistons) cannot be judged as to its fashionableness, and fashions in a good whose efficient life is long would be expensive. Hence fashion generally concentrates on the cheaper classes of garments and reading matter, and there is more fashion in furniture than in housing.

Fashion can be pursued with the purse or with the expenditure of time. A person may be well-read (i.e., have read the recent books generally believed to be important), but if his time is valuable in the market place, it is much more likely that his spouse will be the well-read member of the family. (So the ratio of the literacy of wife to that of husband is positively related to the husband's earning power, and inversely related to her earning power.)

The demand for fashion can be formalized by assuming that the distinction available to any person depends on his social environment, and his own efforts: he can be fashionable, give to approved charities, choose prestigious occupations, and do other things that affect his distinction. Following recent work on social interactions, we can write the social distinction of the ith person as

$$R_i = D_i + h_i \tag{20}$$

where D_i is the contribution to his distinction of his social environment, and h_i is his own contribution. Each person maximizes a utility function of R and other commodities subject to a budget constraint that depends on his own income and the exogenously given social environment.[19] A number of general results have been developed with this approach (see Becker), and a few are mentioned here to indicate that the demand for fashion (and other determinants of social distinction) can be systematically analyzed without assuming that tastes shift.

An increase in i's own income, prices held constant, would increase his demand for social distinction and other commodities. If his social environment were unchanged, the whole increase in his distinction would be produced by an increase in his own contributions to fashion and other distinction-producing goods. Therefore, even an average income elasticity of demand for distinction would imply a high income elasticity of demand for fashion (and these other distinction-producing) goods, which is consistent with the common judgement that fashion is a luxury good.[20]

If other persons increase their contributions to their own distinction, this may lower i's distinction by reducing his social environment. For distinction is scarce and is to a large extent simply redistributed among persons: an increase in one person's distinction generally requires a reduction in that of other persons. This is why people are often "forced" to conform to new fashions. When some gain distinction by paying

[19]The budget constraint for i can be written as

$$\Pi_{R_i} R + \Pi_z Z = I_i + \Pi_{R_i} D_i = S_i$$

where Z are other commodities, Π_{R_i} is his marginal cost of changing R, I_i is his own full income, and S_i is his "social income."

[20]Marshall believed that the desire for distinction was the most powerful of passions and a major source of the demand for luxury expenditures (see pp. 87–88, 106).

attention to (say) new fashions, they lower the social environment of others. The latter are induced to increase their own efforts to achieve distinction, including a demand for these new fashions, because an exogenous decline in their social environment induces them to increase their own contributions to their distinction.

Therefore, an increase in all incomes induces an even greater increase in i's contribution to his distinction than does an increase in his own income alone. For an increase in the income of others lowers i's social environment because they spend more on their own distinction; the reduction in his environment induces a further increase in i's contribution to his distinction. Consequently, we expect wealthy countries like the United States to pay more attention to fashion than poor countries like India, even if tastes were the same in wealthy and poor countries.

VI. Conclusion

We have surveyed four classes of phenomena widely believed to be inconsistent with the stability of tastes: addiction, habitual behavior, advertising, and fashions, and in each case offered an alternative explanation. That alternative explanation did not simply reconcile the phenomena in question with the stability of tastes, but also sought to show that the hypothesis of stable tastes yielded more useful predictions about observable behavior.

Of course, this short list of categories is far from comprehensive: for example, we have not entered into the literature of risk aversion and risk preference, one of the richest sources of *ad hoc* assumptions concerning tastes. Nor have we considered the extensive literature on time preference, which often alleges that people "systematically undervalue . . . future wants".[21]

[21]This quote is taken from the following longer passage in Böhm-Bawerk:

> We must now consider a *second* phenomenon of human experience—one that is heavily fraught with consequence. That is the fact that we feel less concerned about future sensations of joy and sorrow simply because they do lie in the future, and the lessening of our concern is in proportion to the remoteness of that future. Consequently we accord to goods which are intended to serve future ends a value which falls short of the true intensity of their future marginal utility. *We systematically undervalue our future wants and also the means which serve to satisfy them.* [p. 268]

The taste for consumption in say 1984 is alleged to continue to shift upward as 1984 gets closer to the present. In spite of the importance frequently attached to time preference, we do not know of any significant behavior that has been illuminated by this assumption. Indeed, given additional space, we would argue that the assumption of time preference impedes the explanation of life cycle variations in the allocation of resources, the secular growth in real incomes, and other phenomena.

Moreover, we have not considered systematic differences in tastes by wealth or other classifications. We also claim, however, that no significant behavior has been illuminated by assumptions of differences in tastes. Instead, they, along with assumptions of unstable tastes, have been a convenient crutch to lean on when the analysis has bogged down. They give the appearance of considered judgement, yet really have only been *ad hoc* arguments that disguise analytical failures.

We have partly translated "unstable tastes" into variables in the household production functions for commodities. The great advantage, however, of relying only on changes in the arguments entering household production functions is that *all* changes in behavior are explained by changes in prices and incomes, precisely the variables that organize and give power to economic analysis. Addiction, advertising, etc. affect not tastes with the endless degrees of freedom they provide, but prices and incomes, and are subject therefore to the constraints imposed by the theorem on negatively inclined demand curves, and other results. Needless to say, we would welcome explanations of why some people become addicted to alcohol and others to Mozart, whether the explanation was a development of our approach or a contribution from some other behavioral discipline.

As we remarked at the outset, no conceivable expenditure of effort on our part could begin to exhaust the possible tests of the hypothesis of stable and uniform preferences. Our task has been oddly two-sided. Our hypothesis is trivial, for it merely asserts that we should apply standard economic logic as extensively as possible. But the self-same hypothesis is also a demanding challenge, for it urges us not to abandon opaque

and complicated problems with the easy suggestion that the further explanation will perhaps someday be produced by one of our sister behavioral sciences.

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