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**Working Paper**

**Habits, Addictions, and Traditions**

Working Paper, No. 71

**Provided in Cooperation with:**

George J. Stigler Center for the Study of the Economy and the State, The University of Chicago  
Booth School of Business

*Suggested Citation:* Becker, Gary S. (1991) : Habits, Addictions, and Traditions, Working Paper, No. 71, The University of Chicago, Center for the Study of the Economy and the State, Chicago, IL

This Version is available at:

<https://hdl.handle.net/10419/262473>

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**HABITS, ADDICTIONS, AND TRADITIONS**

**Gary S. Becker**

Working Paper No. 71

August 1991

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**Habits, Addictions, and Traditions**

**Gary S. Becker**

**University of Chicago and Hoover Institution**

**Nancy Schwartz Lecture**

**Northwestern University**

**May 15, 1991**

**Revised, June 1991**

I have had helpful comments from Joseph Hotz, Kevin Murphy, and Sherwin Rosen, and useful assistance from David Meltzer. I am indebted to a grant from the Lynde and Harry Bradley Foundation to the Center for the Study of the Economy and the State, to the National Institute of Child Health and Development (Grant 5 R37 HD22054), and to the National Science Foundation (Grant SES-9010748) for support.

It is a great honor and privilege to be this year's Nancy Schwartz Lecturer, given the distinguished economists who preceded me, and the person honored by the series. I did not know Nancy Schwartz well personally, but I have known and learned from her work. Economic theory and industrial organization lost an important contributor at too early an age.

### I. Introduction

The usual assumption in most discussions of behavior over time is that choices today are not directly dependent on choices in the past. The great economist J. R. Hicks expressed strong disapproval of this assumption:

It is nonsense that successive consumptions are independent;  
the normal condition is that there is a strong  
complementarity between them [1965, page 261]

It is ironic that this sentence comes at the end of a rather lengthy monograph on economic growth that relies throughout on the independence assumption.

The assumption of independence is not "nonsense," for it usefully simplifies many problems that are not crucially affected by dependencies over time. But the assumption has discouraged economists from grappling with other issues of considerable significance -- including addictions, work habits, preference formation, why children support their elderly parents, preference solutions to the problem of future commitments, and the evolution and stability of institutions. These are the kinds of questions I address in this lecture.

A growing literature during the past two decades has assumed instead of independence that current consumption is affected by past consumption. The most

influential work has been by Boyer [1978], Houthakker and Taylor [1966], Kydland and Prescott [1982], Phelps [1974], Pollak [1970], Ryder and Heal [1973], Spinnewyn [1981], von Weizacker [1971], and various colleagues and students at Chicago: Iannoccone, Murphy, Hansen, Stigler, Constantinides, Heaton, and Hotz. I will not try to review, summarize, or reference these contributions, but will concentrate on the issues that have interested me.

## 2. Habits

Some influences of past consumption on present behavior are obvious. If I just ate a filling dinner, I do not want to eat another dinner in the near future -- not even a Persian delight cooked by my wife. Essentially all goods are substitutes if the time intervals are sufficiently close and the quantities consumed are big enough. Even lovers of potato chips or those most hooked on crack do not want any more now if they consumed large quantities during the past hour.

But for many goods, when the time periods compared are not very close, greater consumption earlier stimulates greater, not lesser, consumption later. Following common usage, I define habitual behavior as displaying a positive relation between past and current consumption; economists call these goods complements. Well-known examples include smoking, using heroin, eating ice cream or Kellogg's Corn Flakes, jogging, attending church, telling lies, and intimacy with a lover.

A full discussion needs to consider both short term substitutions in consumption and the longer-term complementarities. Murphy and I [1988] present a model of cycles or binges in the amount of eating that has both substitutions and

complementarities over time in food consumption, and Heaton [1991] finds both types of relations in the time series on aggregate consumption in the United States. This lecture concentrates on the complementary relations because these are responsible for the habitual behavior I want to highlight.

Of course, there are vast differences in the degree of habituation to the same activity: most people can drink or work regularly without ever becoming alcoholics or workaholics. And the likelihood that a person becomes habituated to any activity varies with circumstances and age. Soldiers who became addicted to drugs while in Viet Nam usually stopped the habit soon after returning to civilian life, while former smokers and alcoholics often resume their habits after becoming unemployed or when their marriages break up.

Habits are harmful or "bad" if greater present consumption lowers future utility, as in the detrimental effects on future health of heavy smoking or drinking. Similarly, habits are beneficial if greater present consumption raises future utility; regular swimming or regular church attendance may be examples. It is natural that bad habits get more attention than good ones, but as we will see, rational behavior also implies that the observed strong habits are more likely to be harmful than beneficial.

If greater past consumption of a good increased the marginal utility of present consumption, myopic persons who do not consider the future consequences of their actions would increase their present consumption. But higher current utility does not guarantee that rational forward-looking persons consume more than in the past. Rational consumers also consider how greater current consumption affects the marginal utilities or disutilities in the future.

Murphy and I provide a necessary and sufficient condition for a rational forward-looking consumer to develop a habit [1988]. It is indeed necessary for greater past consumption to raise the marginal utility from present consumption -- this corresponds to what is called "reinforcement" in the addiction literature. But several other parameters are also important, including the rate of discount on future utilities, and the rate of decay or depreciation in the contribution of past consumption to current utility. The larger the rate at which either the future or past is discounted, the more likely that a good with a given amount of reinforcement is habitual, and the stronger is the habit (see section 1 of the Appendix). This conclusion is intuitive, for the bigger are these discount rates, the smaller are the effects on future utility of greater present consumption. Then reinforcement has the more dominating effect.

An addiction is defined simply as a strong habit. Technically, a habit becomes an addiction when the effects of past consumption on present consumption are sufficiently strong to be destabilizing (see section 1 of the Appendix). Therefore, a shock to an individual, such as unemployment, may lead for a while to larger and larger increases over time in the amount consumed of addictive goods. Demand for addictive goods tends to be bifurcated: people either consume a lot, or they abstain because they anticipate that they will become "hooked" if they begin to consume. Smoking is a good example of bifurcation, for 70 percent of adults in the United States do not smoke, while persons who do smoke generally consume at least half a pack a day.

A habit may be raised into an addiction by exposure to the habit itself. Certain habits, like drug use and heavy drinking, may reduce the attention to future consequences -- there is no reason to assume discount rates on the future are just given

and fixed (elsewhere I have developed an analysis of endogenous discount rates [Becker, 1990]). Since an increase in the discount rate strengthens the commitment to all habits, there would be further induced increases in discount rates. The result may be an explosive expansion of certain habits into powerful addictions.

The presumption from the theory that addictions are partly caused by heavy decay rates on past consumption in a way is consistent with the medical evidence. For the damage to lungs, liver, and other organs declines rather quickly after a person stops heavy drinking or smoking, unless the point of no return had been reached.

Since people who heavily discount the future and past would place little weight on the future consequences of their behavior, they are less likely to be deterred from "harmful" activities that reduce future utility, even when these are not habitual. And they would be less attracted by "beneficial" activities that raise utility in the future, even when these are not habitual, such as limiting cholesterol intake. But since high discount rates on the future and past also foster strong habits and addiction, people with high rates would be especially attracted by harmful activities that are addictive, or at least highly habitual.

Therefore, we expect addictions to be associated with harmful activities. This can explain why addictions usually cause duress -- declines in well-being over time. It can also explain why drug addictions and crime tend to go together, and why religious people tend to be law-abiders, even if drug use and religion do not affect the propensity to engage in crime, and even if crime and religion are not addictive.



Nothing in the analysis of forward-looking utility-maximizing behavior presumes that people know for sure whether they will become habituated or addicted to a substance or activity, although that is sometimes claimed by critics of this approach (see, e.g., Akerlof [1991]). An individual may have considerable uncertainty about whether she would become an alcoholic if she begins to drink regularly. A troubled teen-ager who begins to experiment with drugs may expect, but not be certain, that his life will begin to straighten out, perhaps because of a good job or marriage, before he becomes addicted. Since these and other choices are made under considerable uncertainty, some persons become addicted simply because events turn out to be less favorable than was reasonable to anticipate -- the good job never rescued the drug user. Persons who become addicted because of bad luck may regret their addictions, but that is no more a sign of irrational behavior than is any regret voiced by big losers at a race track that they bet so heavily.

I define traditional behavior as habits that are sensitive to choices in the more distant past -- including sometimes choices made by parents and others in the past -- because the effects of the past decay slowly. Tradition-related habits are unlikely to be addictive because low depreciation rates reduce the strength of a habit. Such habits are especially important for understanding culture and institutions, as I will try to show later.

### 3. Invidious Comparisons

Economists usually do not consider why preferences are what they are, but it is advisable to discuss habit formation since many writers have claimed that

habitual behavior is not fully rational. Although little is known about the mechanisms behind the development of habits, it is not obvious to me that they are less rational than other preferences.

Alcohol, heroin, cocaine, smoking, and certain other drugs have well-documented biological-pharmacological effects on consumers that raise their desire for the drugs. And most people get mental and physical comfort and reassurance in continuing to do what they did in the past. Thomas Jefferson was surely right when he asserted in a letter to an acquaintance that "He who permits himself to tell a lie once, finds it much easier to do it a second and third time, till at length it becomes habitual" [1785].

Another promising lead in understanding the formation of habit comes from recognizing that the utility of many goods depends on how present consumption of these goods compares with the amounts consumed in the past. For example, a given standard of living usually provides less utility to persons who had grown accustomed to a higher standard in the past. It is the decline in health, rather than simply poor health, that often makes elderly persons depressed. And what appeared to be a wonderful view from a newly occupied house may become boring and trite after living there for several years.

Goods that involve such invidious comparisons with the past are "harmful" in the sense I am using this term because greater consumption now lowers future utility by raising the future standard of comparison. What is more interesting for present purposes and less obvious is that such goods also tend to be habitual: current

consumption is encouraged by greater past consumption in order to come closer to the standard set by past behavior.

Indeed, a good must be habitual if utility from the good depends on the difference between current consumption and a weighted sum of the amounts consumed in the past. Note that in such cases the effect of comparisons with the past is so powerful that a good must be habitual regardless of the discount rate on future utilities or the decay rate on past consumption. The habit is stronger when past consumption has a bigger weight, and it is an addiction when past consumption is weighted more heavily than present consumption (see section 2 of the Appendix).

If utility depends on comparisons between present and past consumption, it would be highest just after consumption rose to a permanently higher level, and it would decline over time as the person became accustomed to that level. Similarly, utility would be lowest just after consumption fell to a permanently lower level.

If the standard of living itself involved such comparisons with the past, the nouveau riche would tend to be the happiest of people, the new poor the most miserable, and the long-term rich may not be so much happier than the long-term poor. Indeed, the long term rich are only a little happier than the long-term poor when the weight on past consumption almost equals the weight on present consumption (see section 2 of the Appendix, and Ryder and Heal [1973]). Suicides might be more closely related to declines in the living standard -- perhaps due to a loss of wealth or health -- than to the level itself.

Adam Smith [1976] has a few wonderful paragraphs in The Theory of Moral Sentiments on the transitory gains in utility from a higher standard of living:

The poor man's son, whom heaven in its anger has visited with ambition . . . pursues the idea of a certain artificial and elegant repose . . . which, if in the extremity of old age he should at last attain to it, he will find to be in no respect preferable to that humble security and contentment which he has abandoned for it. [pages 299-300] (I owe this reference to George Stigler.)

Rapid economic growth raises the level of happiness partly by increasing the number of new rich and reducing the number of new poor. Indeed, a mere slowing of the growth rate could lower utility even when incomes continue to rise if the habitual component to the standard of living were sufficiently powerful.

#### 4. Price and Wealth Effects

It is often claimed that habitual and traditional behavior, especially addictions, do not respond much to changes in prices and wealth. The explanation sometimes offered is that habits influence behavior in ways that are independent of calculation, or that habits are locked in by the past. I will consider only the responses of rational habitual behavior since I am claiming in this lecture that habitual behavior does not imply a reluctance to "calculate."

An unexpected fall in the price of an habitual good may have only a slight impact on demand as long as past consumption has not changed much. This is probably the basis for the claim that habits get locked in by the past. But the

magnitude of the response to say a permanent fall in price would grow over time as consumption continues to increase, even if it only increased slightly at first. By the definition of highly habitual goods, each increase in consumption of these goods raises future consumption by relatively large amounts. Therefore, it is not surprising that the long run price elasticity of demand between steady states is larger, not smaller, for the more strongly habitual goods (see Becker and Murphy [1988]). Moreover, short run changes in demand are misleading since the ratio of short run to long run elasticities is smaller for the stronger habits (see Becker, Grossman and Murphy [1991]).

Mike Grossman, Murphy, and I [1990] recently used the rational habit model to study empirically the demand for cigarettes in the United States. We find cigarette demand to be rather strongly habitual, a not very surprising conclusion. The responses to price changes are not small: a 10 percent permanent fall in the price of a pack of cigarettes increases smoking by 4 percent one year later, and by almost 8 percent after a few years. Perhaps more surprising is the evidence that smokers are not myopic -- they do consider future consequences, as measured by the effects of future prices on current consumption.

There are strong differences of opinion in the United States about whether drug use should be legalized, differences that cut across political labels of liberal or conservative. Everyone agrees that legalization would greatly reduce the retail price of drugs, but much of the disagreement comes from different views about how legalization will affect the demand for drugs. Since many drugs are strongly habitual and even addictive, the analysis of rational addiction suggests that the demand for drugs may not increase much shortly after legalization, but that it would increase by a lot in the long

run -- especially by the poor (see Becker-Grossman-Murphy [1991]) -- unless legalization has other effects than simply lowering price.

One important other effect concerns peer pressure, which induces some teenagers to smoke, drink heavily, and experiment with drugs. Although I do not know of convincing reasons why strongly habitual and addictive behavior is generally more subject to pressure from peers than other behavior, it is straightforward to show that habitual behavior is more vulnerable, in the sense that a given level of peer pressure has an especially large effect on habitual behavior. Strong peer pressure can convert moderately habitual behavior into what appears to be a strong habit or even an addiction.

Consider a fall in price of a habitual good subject to peer pressure. Each consumer would increase his demand, partly because price is lower, and partly because other consumers have raised their demands. Habit increases demand over time, and so too does the pressure to consume more when peers also do. This synergy between peer pressure and habit implies that peer pressure has a larger effect on the elasticity of demand when the habit is stronger; similarly, a stronger habit has more of an effect on the long run elasticity where there is greater peer pressure (see section 3 of the Appendix). Consequently, it may only appear that peer pressure is stronger for habitual behavior since such pressure has greater effects on demand when habits are stronger.

The importance of peer pressure in the market for drugs generally strengthens the conclusion that legalization would greatly increase the use of drugs. One qualification would be if pressure to use drugs declined when they became legal. Another would be if the synergy between peer pressure and habits produced sections of

positively sloped demand curves (see section 3 of the Appendix), and hence multiple equilibria in the drug market. Legalization might then lower both price and drug use by shifting the market to a wholly different equilibrium. As yet, however, there is no evidence that the drug market is characterized by such multiple equilibria.

Econometric studies usually find that high taxes on incomes and other taxes on work effort do not have large effects on the hours worked by men. Yet more than fifty years of weak work incentives under communist rule in Eastern Europe and elsewhere had a shattering effect on work effort in these countries. The commitment to hard work apparently has also eroded in countries like Sweden that greatly raised the effective tax on work effort during the past quarter century.

The econometric findings can be reconciled with these other observations by recognizing that work is a tradition-habit that builds up very slowly over time, perhaps partly under the influence of examples set by parents and others. As Victor Hugo said, "Nothing is more dangerous than discontinued labor -- it is habit lost. A habit easy to abandon, difficult to resume" [1909, Vol. II, p. 159]. The long time it takes for high taxes and other policies to break down slowly accumulated work habits is not easily captured by econometric studies, even by studies that use a few years of panel data to discover some effects of work habits (see, e.g., Bover [1991]).

Countries can take advantage of the slow decay of good work habits by imposing heavy temporary taxes on effort. But the pessimistic side of the story is that Eastern Europe and the Soviet Union will have difficulty rebuilding the good work habits eroded during the many decades of mismanagement and weak incentives.

Being on welfare may create a bad habit if children and parents lose their initiative by becoming dependent on government handouts. Then many families may refuse to go on welfare, even when eligible -- as is the case in the United States -- because the cost of dependency exceeds the value of the payments. Although a sizable fall in welfare payments might greatly increase the number who decline to go on, it could initially have only a minor impact on the number of families who remain on welfare since they have become habituated to the welfare payments (see Sanders [1991]).

The permanent income model explains why total consumption often does not respond much to income shocks by assuming that many shocks have a large temporary component. Yet some critics have argued that aggregate consumption in the United States is too stable -- the excess stability issue -- to be explained by the permanent income story because aggregate shocks are alleged to have a small transitory component. Even if they are right about aggregate shocks, and there is considerable disagreement, the problem is not with the permanent income concept -- which is surely basically correct -- but with the assumption that preferences are separable over time. If current consumption depends on past consumption, even a permanent shock to income may initially have only a small effect on consumption.

The effect of habitual behavior on the consumption responses to possibly permanent shocks can explain most of the behavior commonly explained since Friedman's work by nonhabitual responses to transitory shocks. For example, Friedman showed that higher-income groups would save a larger fraction of their incomes than lower-income groups if only because these groups contain relatively many persons who



received positive transitory income shocks. However, higher-income groups save a lot perhaps also because they contain relatively many persons who are newly rich. I believe that the effects of habits as well as the distinction between permanent and transitory income are needed for a satisfactory explanation of aggregate consumption behavior (see Heaton [1991] and Ferson and Constantinides [forthcoming]).

## 5. Preference Formation

Let me turn to a few more speculative but very important issues.

Each person is born as a tabula rasa -- an empty slate -- that gets filled in by childhood and later experiences. These experiences influence teen-age and adult desires and choices partly by creating habits, addictions, and traditions. The habits acquired as a child or young adult generally continue to influence behavior even when the environment changes radically. For example, Indian adults who migrate to the United States often eat the same type of cuisine they had in India, and continue to wear the same style of clothing. A woman who was badly sexually abused as a child may forever fear and dislike men, including those who would treat her with consideration and respect. A person may remain an alcoholic until he dies mainly because he started drinking heavily as a teen-ager.

Childhood experiences can greatly influence behavior over a person's entire life because it may not pay to try to greatly change habits when the environment changes. Childhood-acquired habits then continue, even though these would not have developed if the environment when growing up had been the same as the environment faced as an adult.

The Freudian emphasis on the crucial influence of early childhood on later behavior would be consistent with utility-maximizing forward-looking behavior if behavior were highly habitual. For then experiences while a child could have a very large effect on adult preferences and choices.

Children spend their early years under the care of parents and close relatives who determine what they eat, read, observe, and hear. The enormous influence this has on children's preferences explains the close link between parents and children in many attitudes and choices, including religious and political party affiliations, the propensities to smoke, eat breakfast, or divorce, and the taste for Chinese, Iranian, or Southern-style cuisine.

A natural way in a utility-maximizing framework to model the influence of parents on children is to assume that the preferences of children and adults evolve from early childhood and later experiences under the influence of habitual, including addictive and traditional, behavior. Indeed, some of my remarks will go beyond habitual behavior to other recursive influences of past experiences on present and future preferences.

Altruistic parents maximize their own utility in part by maximizing their children's. They would try to direct the evolution of children's preferences toward raising the utility of children. For example, parents may refrain from smoking even when that gives them much pleasure because their smoking raises the likelihood that the children will smoke. Or they may take their children to church, even when not religious, because they believe exposure to religion is good for children. Indeed, many parents stop going after their children leave home.

Selfish parents do not care about the welfare of children, but they too are often concerned about the evolution of children's preferences. They may want to be taken care of when old or ill, but cannot have a contract with their children to help out. However, they can try to shape the formation of children's preferences to raise the chances their children will help voluntarily.

The preferences children get when young, in effect, can precommit them to helping out much later when they are adults and their parents are elderly. Parents can help make the children altruistic, or can make grown children feel "guilty" when they do not help. Propensities toward guilt may lower the lifetime utility of children -- selfish parents do not care -- but helping out of guilt may raise the utility of adult children, conditional on their past experiences.

Therefore, even selfish parents do not necessarily neglect or abuse children, for they might spend considerable time, money, and emotional resources on children to rig the evolution of preferences in their own favor. This sounds calculating and selfish. It is. Yet the opportunity to "commit" children to helping out when parents need it can induce selfish parents to treat their children much better than they would if adult preferences and behavior did not evolve from childhood experiences and treatment. It also implies that selfish parents become meaner when they need not rely on their children, perhaps because the government becomes committed to helping out the elderly in need.

Children carry along into adulthood the baggage of experiences they had only a limited role in shaping. Therefore, a rational person can meaningfully state that she does not "like" her preferences in the sense that she doesn't like the inherited

baggage: the guilt, the sexual fears, the propensity to smoke or drink heavily, and so forth. She can change the stock of experiences over time, but how much a rational person wants to change depends on how long she expects to live, the strength of the influence of the past on present choices, and other factors. We all are to some extent prisoners of experiences we wish we never had.

Economists are so conditioned to identifying rational choice with separable preferences that we often call "irrational" quite rational behavior that is the result of past experiences. We have trouble understanding the people who take good care of elderly parents even when not forced by social norms or altruism -- I have tried to indicate why this can be utility maximizing behavior once the importance of guilt and other results of past experiences is recognized.

A prominent example is the literature on "endowment" effects (see Kahneman, Netsch and Thaler, [1990]). A family may refuse to sell for half-a-million dollars the house it has lived in for twenty years, even though it would be unwilling to spend anywhere near that amount for an otherwise equivalent house. Of course, the qualifier "otherwise" is crucial since twenty years in the same house presumably built up memories and attachments to that particular house, not to a seemingly "equivalent" house that is really not equivalent.

A more difficult example of the endowment effect concerns a person like Sherwin Rosen who stores a young bottle of wine that cost a few bucks. By luck the bottle turns out to be worth several hundred dollars after ten years. But Sherwin refuses to sell, even though he would never contemplate paying that much for an otherwise equivalent bottle. Irrational? Or like the family that refuses to sell its house,

a case where the experience of "consuming" a particular bottle for a long time raised the value attached to that bottle, not to an otherwise equivalent bottle?

Other "rational" interpretations of the refusal are possible; e.g., Sherwin may get pleasure from bragging about his shrewdness in acquiring such a bottle. And an interpretation that uses the effects of owning the bottle for ten years on present demand for it may seem forced since the bottle was not "consumed" during the decade. But such a reaction partly reflects the economist's narrow conception of "consumption." People consume paintings, and old rugs and coins simply by looking at them occasionally, and they may value such objects more over time as they grow attached to them.

## 6. Commitment, Institutions, and Culture

Game theory has shown the crucial importance of commitment in the strategic interactions over time of two or more participants. The equilibria that emerge from decisions over time are often highly sensitive to whether players can commit future behavior. Yet it may be difficult to enforce commitment since people can renege on promises or slip out of contractual obligations. Still, I believe the difficulty of obtaining binding commitments has been exaggerated because of the common assumption that preferences are independent of the past, so that a person's utility maximizing choices at any moment do not directly depend on past choices.

For habits, addictions, traditions, and other preferences that are directly contingent on past choices partly control, and hence commit, future behavior in

predictable ways. Indeed, habits and the like may be very good substitutes for long-term contracts and other explicit commitment mechanisms.

Consider, for example, a firm that would charge consumers a lower price now if they agree to buy more of the good for some time into the future.

Unfortunately, it is not possible to write a contract that ensures future purchases. But a contract may not be necessary if the good is habitual since habituated consumers are automatically committed to buying more in the future when they buy more now.

A firm may help finance investments in a worker's general skills if the worker will remain with the firm. A written contract that commits the worker to stay is not enforceable, but the firm may know that the worker is likely to remain after he has been there for a while since the job becomes a habit.

I have already shown how parents may be reasonably confident their children will help out when they become adults and the parents are elderly because the parents help structure the children's adult preferences by controlling childhood experiences.

Such influences of habitual and other recursive preference relations on behavior get incorporated into the optimal strategies of players in sequential games. For example, a parent may save less to support herself when elderly if her children are conditioned to help out. A boss may exploit his workers' attachments to their jobs, or society may punish crimes more severely now because that raises social support for punishments in the future.

Elsewhere, Grossman, Murphy and I [1990] consider the optimal pricing of a monopolist who sells an habitual good. We show that wealth-maximizing prices

are below the prices where current marginal revenue equals marginal cost since a lower price now, in effect, "commits" consumers to increase their future consumption. Therefore, the optimal prices will be higher if consumers are prevented from raising their future consumption. This analysis can explain the rise in price-cost margins, and hence "profits," of cigarette companies during the past few years. The continuing growth in legislation that restricts smoking is a major observable obstacle to future increases in the demand for cigarettes. Producers are induced to raise cigarette prices and current "profits," even though they are obviously hurt by legislated restrictions on smoking.

These examples of the effects of preferences on commitment are rather straightforward, although some of you may be dubious. You will then be far more dubious of the following examples, which extend the analysis of habits and traditions to include institutions and culture. I was led to this line of argument by reading in the Federalist Papers James Madison's criticisms of Jefferson's proposal for temporary constitutions that are rewritten by each succeeding generation. Madison did more than just claim that a constitution protects fundamental rights and helps commit the actions of future generations. He recognized that a basic problem is whether people are willing to obey a constitution: the world is strewn with wonderful constitutions that are ignored or evaded.

Madison argued in effect that a constitution is more likely to be followed out of habit and tradition the longer it has been around. The frequent changes advocated by Jefferson would deprive a constitution of -- I can do no better than quote Madison's words --

that veneration, which time bestows on everything, and without which perhaps the wisest and freest governments would not possess the requisite stability

and

when the examples which fortify opinion are ancient as well as numerous, they are known to have a double effect.

(Madison [1787])

Madison and others -- he apparently was following Hume [1748] -- claim that preferences are formed not simply by what a person did in the past, what his parents did, and what contemporary peers are doing, but also by the behavior of past generations of "peers." This extensive influence of the past on present beliefs and behavior helps stabilize older institutions and cultures. As Madison argued in rejecting Jefferson's suggestion for frequent change, the ultimate strength of the support for an institution depends on whether there is time to cumulate the support over several generations.

Sometimes, support for an institution or ethic -- such as the belief in honesty -- is called "unthinking" attachment to a culture or ethic. Wordsworth claimed that "habit rules the unreflecting herd" [1822]. But this is no more "unthinking" than other preferences that are formed by what happened in the past.

Obedience to institutions often can be utilized in social decision making. The armed forces try to instill the habit of obedience to commands during fighting by emphasizing military traditions, rigid rules, and response to peer pressure. Young



people asked to contribute heavily to social security may not have to worry that the next generation will refuse to support them when they become elderly, even though it might appear to be in the next generation's self-interest to do so. Indeed, this generation's support of the elderly may well strengthen the tradition-habit that will induce the next generation to support the elderly.

I readily admit that I do not know how far one can push this point of view. And the stress on institutions influenced by tradition-habits and peer pressure may seem to be an ad hoc trick invented to solve intractable commitment and collective choice problems. But this approach does come out of an attention to more straightforward problems, such as heavy drinking, drug use, and brand preferences. And the evolution of preferences out of past experiences seems far more intuitive, even when extended to institutions and culture, than the opposite assumption so dominant in economics that preferences are independent of the past.

Some of you might be surprised to hear a co-author of the "de gustibus" point of view, with its emphasis on stable preferences, waxing enthusiastically about the formation of preferences. But what de gustibus assumes is that meta preferences are stable. Meta preferences include past choices and choices by others as arguments in a person's current utility function. In fact, addictive behavior and social interactions were two of the major examples analyzed by Stigler and myself.

The message of that paper is not that preferences at time  $t$  for different people depend in the same way on their consumption at  $t$ . Rather, it is that common rules determine the way different variables and experiences enter the meta preferences that motivate most people at most times. And that forward-looking rational actors

maximize the utility from their meta preferences, not from current preferences alone, because they recognize that choices today affect their utilities in the future.

## 7. Conclusion

My concluding remarks can be brief. I have tried to show that the past casts a long shadow on the present through its influence on the formation of present preferences and choices. These links between the past and the present do not simply provide a technical generalization of the independence assumption regarding preferences that permits a few more wiggles in the data to be explained.

The systematic analysis of habitual, addictive, and traditional behavior, and of other ways the past influences present preferences, have profound implications for the analysis of many kinds of economic and social phenomena. These surely include the demand for branded goods, how income shocks affect aggregate consumption, and short and long run changes in smoking due to higher taxes on a pack of cigarettes. They also include a better understanding of how legalization would change drug use, the effect of income and other taxes on effort and work habits in the long run, and why the nouveau riche and new poor are so different from the long-term rich and long-term poor.

With a still bolder vision and a lot of luck, the link between the past and present choices may also explain why and how parents influence the formation of children' preferences, how people get committed to future decisions, and the formation and support of institutions and culture.

This may be enough food for thought and controversy on one hot  
afternoon!

## BIBLIOGRAPHY

- Akerlof, George A. "Procrastination and Obedience," Richard T. Ely Lecture, American Economic Review Papers and Proceedings 81, no. 2 (May 1991): 1-19.
- Becker, Gary S. "Optimal Discounting of the Future," Department of Economics, University of Chicago, April, 1990.
- Becker, Gary S., Grossman, Michael, and Murphy, Kevin M. "An Empirical Analysis of Cigarette Addiction," NBER working Paper No. 3322, April, 1990
- \_\_\_\_\_. "Rational Addiction and the Effect of Price on Consumption," American Economic Review Papers and Proceedings 81, no. 2 (May 1991): 237-41.
- Becker, Gary S., and Murphy, Kevin M. "A Theory of Rational Addiction," Journal of Political Economy 96, no. 4, (August 1988): 675-700.
- Bover, Olympia. "Relaxing Intertemporal Separability: A Rational Habits Model of Labor Supply Estimated from Panel Data," Journal of Labor Economics 9, No. 1 (January 1991): 85-100.
- Boyer, Marcel. "A Habit Forming Optimal Growth Model," International Economic Review 19 (October 1978): 585-609.

- Ferson, Wayne, and Constantinides, George. "Habit Persistence and Durability in Aggregate Consumption: Empirical Tests", Journal of Financial Economics, forthcoming.
- Heaton, John. "An Empirical Investigation of Asset Pricing with Temporally Dependent Preference Specifications," Massachusetts Institute of Technology, February, 1991.
- Hicks, John R. Capital and Growth (Oxford: Clarendon Press, 1965).
- Houthakker, H.S., and Taylor, Lester D. Consumer Demand in the United States 1929-1970 (Cambridge, MA: Harvard University Press, 1966).
- Hugo, Victor. Les Misérables [1862], Saint Denis, Book II, Chapter I.  
Translated by Charles E. Wilbour (New York: J.M. Dent & Sons, 1909).
- Hume, David. An Enquiry Concerning Human Understanding (1748).
- Jefferson, Thomas. Letter to Peter Carr, August 19, 1785.
- Kahneman, Daniel; Tversky, Amos, and Thaler, Richard. "Experimental Tests of the Endowment Effect and the Coase Theorem," Journal of Political Economy 98 (no. 6, December 1990): 1325-48.
- Kydland, Finn E., and Prescott, Edward C. "Time To Build and Aggregate Fluctuations," Econometrica 50, no. 6 (November 1982): 1345-70.
- Madison, James. Federalist Papers, No. 49, 1787.
- Phlips, Louis. Applied Consumption Analysis (Amsterdam: North-Holland, 1974).
- Pollak, Robert A. "Habit Formation and Dynamic Demand Functions," Journal of Political Economy 78, no. 4, pt. 1 (July/August 1970): 745-63

- Ryder, Harl E., Jr., and Heal, Geoffrey M. "Optimum Growth with Intertemporally Dependent Preferences," Review of Economic Studies 40 (January 1973): 1-33.
- Sanders, Seth. "A Dynamic Model of Welfare Partaicipation," Ph.D. Thesis, Department of Economics, University of Chicago, 1991.
- Smith, Adam. The Theory of Moral Sentiments (Indianapolis, IN: Liberty Classics, 1976).
- Wordsworth, William. Ecclesiastical Sonnets, pt. II, Sonnet 28, "Reflections," (1822).

## APPENDIX

1. Let the utility function at time  $t$  be

$$U(t) = U(y(t), c(t), S(t)) , \quad (1.1)$$

where  $y$  is a non-habitual good,  $c$  is habitual, and  $\dot{S}(t) = c(t) - \delta S(t)$ , where  $\delta$  is the depreciation rate on past consumption of  $c$ . The overall utility function at  $t = 0$  is the discounted value of the  $U(t)$ , where  $\sigma$  is the rate of discount. I assume that overall utility is maximized subject to a wealth constraint, where the amount of wealth is given.

A good is habitual if

$$\frac{dc(s)}{dS(t)} > 0 \quad (1.2)$$

when the marginal utility of wealth is held constant. That is, when a "compensated" increase in past consumption raises present consumption. Since at a steady state,  $c = \delta S$ , it is natural to define an addiction as a habit strong enough that

$$\frac{dc(t)}{dS(t)} > \delta \quad (1.3)$$

This implies that a steady state is unstable if  $c$  is addictive near this state.

Becker and Murphy show that a necessary and sufficient condition for a good to be habitual near a steady state is that

$$(\sigma+2\delta)U_{cs} > -U_{ss} , \quad (1.4)$$

where  $U_{cs} = (\partial^2 U)/(\partial c \partial S)$ , and  $U_{ss} = (\partial^2 U)/(\partial S^2)$ .

2. Let utility from the habitual good  $c$  at time  $t$  be separable from the other goods ( $y$ ), and expressible as

$$V(t) = V[c(t) - \alpha \delta S(t)] , \quad (2.1)$$

where  $\alpha$  is a constant  $> 0$ . Since  $\delta$  is the depreciation rate on past consumption of  $c$ ,  $\delta S(t) = \bar{c}(t)$ , a weighted average of past consumption.

Then

$$V_{cc} = V''$$

$$V_{cs} = -\alpha \delta V''$$

$$V_{ss} = (\alpha \delta)^2 V''$$

and



$$2\delta V_{cs} = -2\alpha\delta^2 V'' > -V_{ss} = -\alpha^2\delta^2 V'' \quad \text{for all } \alpha < 2.$$

Therefore, for all  $\sigma$  and  $\delta > 0$ , the modified Stone-Geary utility function in equation (2.1) satisfies the condition in equation (1.4) for  $c$  to be a habit. It can be shown that the habit is stronger when  $\alpha$  is greater, and it is an addiction when  $\alpha > 1$ .

Equation (2.1) implies that in a steady state where  $c = \delta S = \bar{c}$ ,

$$U = V[\bar{c}(1-\alpha)],$$

and

(2.2)

$$V_c = V'(1-\alpha).$$

Therefore, a rise in  $c$  between steady states has a smaller effect on utility when the habit ( $\alpha$ ) is stronger (given the value of  $V'$ ).

The effect on steady state consumption of a permanent change in the price of  $c$  compensated to hold the marginal utility of wealth ( $\lambda$ ) constant is

$$\frac{dc}{dp_c} = \frac{\lambda}{V''(1-\alpha)^2} \quad \text{if } \sigma = 0 \quad (2.3)$$

(This is a special case of Equation (18) in Becker-Murphy [1988].) Clearly, the effect on  $c$  is greater when  $\alpha$  -- the strength of the habit -- is bigger.

3. I now expand the utility function in equation (2.1) to include peer pressure:

$$V(t) = [c(t) - \alpha \delta S(t) - \gamma \bar{c}(t)], \quad (3.1)$$

where  $\gamma > 0$  measures the strength of the pressure, and  $\bar{c} = \Sigma c_j / N = c$  when all  $N$  consumers are identical. Peer pressure alters the effects of a change in the price of  $c$  on its steady state consumption to

$$\frac{dc}{dp_c} = \frac{\lambda}{V''(1-\alpha)(1-\alpha-\gamma)} \quad \text{if } \sigma = 0. \quad (3.2)$$

A proof is straightforward. The first order condition for each consumer near a steady state is

$$V_c + \frac{V_s}{\sigma + \delta} = \lambda p_c.$$

Differentiating with respect to  $p_c$  while holding  $\lambda$  constant, assuming

$c = \delta S$ , and  $\bar{c} = c$ , we get

$$\left( V_{cc} + \frac{V_{cs}}{\delta} + V_{c\bar{c}} + \left( \frac{V_{ss}}{\delta} + V_{sc} V_{s\bar{c}} \right) \frac{1}{\sigma + \delta} \right) \frac{dc}{dp_c} = \lambda$$

Substituting  $V'' = V_{cc}$ ,  $-\alpha\delta V'' = V_{cs}$ ,  $\alpha^2\delta^2 V'' = V_{ss}$ ,  $-\gamma V'' = V_{cc}$ , and  $\alpha\gamma\delta V'' = V_{sc}$ , and setting  $\sigma = 0$ , we get

$$V''(1-2\alpha-\gamma+\alpha^2+\alpha\gamma)\frac{dc}{dp_c} = \lambda,$$

which is Equation (3.2).

Clearly,  $[d/d(\gamma)][(dc)/(dp_c)]$  is greater in absolute value when  $\alpha$  is greater. Moreover, the demand curve becomes unstable  $((dc)/(dp_c) > 0)$  when  $\alpha + \gamma > 1$ .