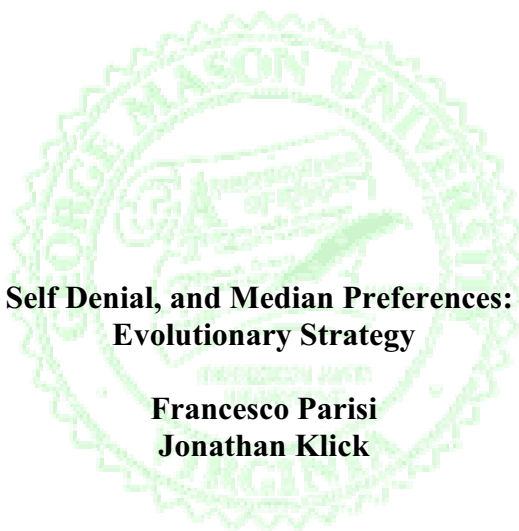


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Evolutionary Strategy**

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**Social Networks, Self Denial, and Median Preferences:
Conformity as an Evolutionary Strategy**

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Social Networks, Self Denial, and Median Preferences: Conformity as an Evolutionary Strategy

Abstract: In this article, we suggest that human attitudes of conformity can be understood as a product of adaptation. While existing models of conformity invoke preference falsification in which individuals hide their true preferences, we posit an adaptive mechanism for conformity. Specifically, because non-conformity leads to costs as a dissenting individual is shut out of social networks and majority coalitions in the collective choice context, individuals have an incentive to sublimate their original preferences to a meta-preference for conformity. However, this adaptation is not costless. Resisting original preferences imposes self-denial costs on an individual that may exceed the benefits of conforming. Further, a conforming individual foregoes the small probability that his first-best original preferences will be realized. Thus, this preference modification model of conformity predicts that individuals with high self-denial costs and lower levels of risk aversion will be less likely to conform.

JEL Codes: K10, D70

Keywords: Conformism, Endogenous Preferences, Social Networks, Preference Falsification

I. Introduction

The private benefits of conformity have been recognized by a number of economists. Broadly speaking, two sources of conformist behavior have been identified in the economics literature. In the work on herd behavior, conformity is the result of economizing on information, rather than any preference for conformity *per se* (e.g., Banerjee 1992 or Bikhchandani, Hirshleifer, and Welch 1992). Work on conformity and social institutions stresses status concerns or the cost of social stigma as the source of conformist behavior (e.g., Bernheim 1994 or Kuran 1995). In this line of work, individuals are assumed to falsify their underlying preferences in order to improve their standing in their social groups.

Herd-behavior and cascade models of choice provide an information-based explanation of conformism. We provide an alternative explanation of conformism that is

more closely related to the preference falsification models than it is to the information models. However, we do not envision conformists as falsifying their individual preferences so much as tempering or retraining their individual preferences in order to fulfill a more deeply ingrained meta-preference or value for conformity. Given the social and political benefits that accrue to conformity, it is plausible that humans have evolved such a meta-preference for conformity and attendant mechanisms for preference modification.

Drawing on the psychological literature regarding hedonic adaptation, we present a model in which individuals adapt their effective preferences to the consensus positions of their social groups. In a social context, this adaptation process is rational since conformity increases the individual's embeddedness or security in his social networks. Conforming to the prevailing preferences of the group thus generates significant benefits. Also in the political sphere, conformity yields potential benefits; given the structural advantage enjoyed by those with median preferences, adaptive conformity increases the expected utility of political participants. While scholars advancing preference falsification theories of conformity recognize the benefits of appearing to conform, they generally ignore the psychological adaptation that can take place to mitigate the personal costs of falsification.

Work on hedonic adaptation and desensitization in the psychology literature suggests that individuals, in many situations, become accustomed to negative stimuli through repeated exposure. This adaptive mechanism allows the individual to experience subsequent exposures to the negative stimuli as affectively neutral unless the intensity of the stimuli exceeds the adaptation level. In economic terms, the process of adaptation

changes inherent preferences such that the disutility arising from consumption of a bad decreases through repeated exposure. Although not directly discussed in the hedonic adaptation literature, a reasonable extrapolation might suggest that individuals can actually modify their tastes, perhaps even adapting a dislike into a preference, through repeated consumption of a good they did not originally care for.

In general, there would be no cause to undertake this modification of preferences for an isolated individual allowed to choose freely among alternative goods corresponding to his original taste. However, if access to or enjoyment of a given social network is conditioned on exhibiting certain preferences and the costs of falsification are higher than the costs of adaptation, individuals will have an incentive to invest in preference modification. They will exhibit a taste for real (as opposed to falsified) conformity.

Self-denial and internalization of external values and norms are ways through which individuals adapt their preferences. There is likely to be heterogeneity in the ability of individuals to adapt their preferences or, put differently, individuals will differ in their self-denial and internalization costs. We can think of these differences as differences in the meta-preference for conformity. We operationalize this notion by including self-denial costs in the adaptation process. However, given the social benefits to conformity, we speculate that conformity meta-preferences are themselves subject to evolutionary selection increasing the fitness of individuals with lower self denial costs.

In section II of this paper, we review the existing economic literature on conformity, focusing on the preference falsification variant, highlighting its failure to consider the adaptive mechanisms individuals employ to conform without resorting to

continual falsification. Section III discusses the psychological literature regarding hedonic adaptation, and section IV uses the insights of hedonic adaptation to suggest an preference adaptation model of conformity. Section V concludes.

II. Preference Falsification and Adaptation

Economic models of conformity, aside from those invoking information cascades and herd behavior, suggest that individuals pretend to share the preferences and beliefs of a particular social group in order to gain some benefit and/or to avoid punishment for being different. Conforming individuals are thought to falsify their inherent preferences when they provide signals to members of the social group, acting as if their inherent preferences and the dominant preferences coincide.

In Berhheim's (1994) article, he assumes that individuals care about status and intrinsic utility. In his signaling model, while status depends upon public perception of an individual's underlying preferences, the public cannot observe those preferences directly. Instead, the individual's actions provide information about the underlying preferences. The equilibrium in the signaling game involves apparent conformity when status is sufficiently highly valued relative to intrinsic consumption/activity values in the individual's utility function. In his framework, individuals trade-off satisfying their intrinsic preferences in order to send signals that imply they hold the preferences that are highly valued by society in order to gain status.

Bernheim justifies his assumption to include status in an individual's utility function by citing empirical evidence in the psychology literature that individuals directly value status. Also, he argues that evolutionary pressures reinforce the tendency to value

status, since more highly regarded individuals will have increased opportunities to reproduce. Social institutions may also evolve to increase the payoff to having preferences for esteem since such preferences may facilitate coordination. Bernheim's signaling game, however, does not consider the possibility that individuals might actually adapt their underlying preferences. Instead, although he does not use the term, the behavior he describes is essentially what Kuran refers to as "preference falsification," as an individual undertakes actions that belie his intrinsic preferences to induce others to infer that he holds the socially favored preferences.

In Kuran's work,¹ individuals face pressures to indicate their support for the dominant political positions in their society, regardless of their underlying political beliefs and preferences. Though individuals gain utility from expressing their underlying beliefs and preferences, they also face social costs if they dissent from the dominant position. If the expected costs of revealing private preferences exceed the internal benefits of being truthful, the individual will falsify his preferences. In Kuran's model, many individuals may hold similar underlying preferences that run counter to the reigning political position, but, because of wide-spread preference falsification, each may be afraid to dissent from the status quo.

Kuran uses this framework to develop a theory of unanticipated revolutions. Specifically, although a given regime might appear to command popular support, the appearance may be the result of preference falsification. Once a critical mass of individuals reveal their true preferences, individuals who had previously chosen to falsify

¹ Kuran (1995) incorporates earlier articles (Kuran 1987a, 1987b, 1989, 1990, among others) that lay out the structure and implications of preference falsification.

their preferences now face lower costs of dissent. Because of this, expressed popular opinion can reverse itself relatively quickly once a spark of dissent is revealed.

Although it seems clear, both from common experience and from the case studies Kuran presents, that individuals do falsify their preferences to a degree to gain social benefits or to avoid social punishment, assuming that all underlying preferences are fixed misses the importance of adaptive mechanisms. That is, in both Bernheim and Kuran's models, falsification has a cost that is incurred each time a private preference is falsified in public. Presumably, over time, individuals might develop strategies to reduce this cost. The most direct strategy might be to modify one's original preferences to coincide with the dominant preference. Such a strategy not only lowers the disutility generated through falsification, but it also lowers the probability that the social network will discover the individual's deception. Although the idea of preference modification is largely foreign to the economics literature and may appear to be a mere semantic trick in which an individual engages in internal preference falsification or self deception, psychologists have documented the phenomenon of preference adaptation.

III. Hedonic Adaptation: Developing a Taste for Scotch, Cigarettes, and Opera

Although economists generally assume stable tastes and preferences (see, for example, Becker and Stigler 1977), this is clearly an assumption of convenience as opposed to one borne of realism. Throughout an individual's life, there are many changes that occur in terms of changing preferences for goods and services that are unrelated to exogenous changes in relative prices and disposable income. For instance, while many children appear to enjoy eating dirt (or even worse, cotton candy), few retain

this preference into adulthood. Similarly, there are many goods enjoyed in one's adult years that are entirely unattractive to most children, such as fine art or gourmet food.

From an analytical standpoint, economists have generally ignored these changes in tastes and preferences; thus it is not clear how to go about modeling the phenomenon. One possibility is to incorporate a stochastic element to the utility function to represent exogenous changes in taste and preferences. However, from our perspective, the potential randomness in an individual's tastes is less interesting than the teleological variation in tastes.

In essence, we wish to examine how individuals develop tastes for goods that they do not naturally enjoy and why they undertake that development. Also, presumably, there is a symmetric process involved in abandoning some natural preferences that one wishes not to have. As indicated above, some of the most obvious preference transitions occur as one moves from childhood to adulthood, such as developing a taste for alcohol, tobacco, or culture, but there is no particular reason why preference transitions would be limited to moving between these life stages. Preferences often change within childhood and within adulthood too.

We first will address the question of how an individual changes certain preferences, and then we will speculate about possible reasons for endogenous transformations of individual preferences. The psychological literature on hedonic adaptation sheds some light on how an individual goes about developing a taste that is at odds with his initial position regarding a particular good.

Hedonic adaptation involves a reduction in the affective intensity of an adverse circumstance. The mechanisms of adaptation can be physical, behavioral, or cognitive.

For example, an individual's sense of smell may adapt to repeated exposure to a foul odor by perceiving it as less intense as time goes on, decreasing the unpleasantness of being exposed to the odor or the individual may learn to direct his thoughts elsewhere to distract himself from the unpleasantness of the odor (Frederick and Loewenstein, 1999).

Reduction of the subjective intensity of a particular stimulus through hedonic adaptation can take two general forms. Shifting adaptation levels involves changing the stimulus level that is perceived as neutral, while desensitization reduces the subjective intensity generally. That is, while shifting adaptation changes the point at which the marginal effect on utility of changing the level of exposure to the stimulus is zero, desensitization lowers the magnitude of the marginal effect of exposure on utility at all exposure levels.

To operationalize this adaptation, Helson (1947, 1948, and 1964) posited that individuals exhibit an adaptation level equal to the average level of exposure they have experienced with respect to a stimulus. Current utility is then a function of the difference between current exposure and the adaptation level. Others have modified the model to allow for an adaptation level that is a weighted average of past exposure, with more recent exposure levels carrying greater weight (see, for example, Hardie, Johnson, and Fader 1993).

Although empirical evidence suggests that hedonic adaptation can actually turn a negative stimulus into a positively perceived stimulus, little attention has been given to this interesting phenomenon in economic theory. In empirical studies, this effect has been observed most frequently in studies involving exposure to negatively perceived foods. Rozin and Schiller (1980) claim most adults enjoy at least one good that they

found offensive at one time. Goods fitting this description include beer, coffee, chili peppers, strong spices, and tobacco. This finding implies that, for some goods at least, repeated exposure yields both adaptation and sensitization. Empirical studies finding this flipping effect include Torrence (1958), Pliner (1982), Birch and Marlin (1982), Beauchamp, Bertino, and Engelman (1983), Crandall (1984), Kahneman and Snell (1990), and Stevenson and Yeomans (1995). Each of us can think of additional anecdotal evidence of similar processes of transformation, including evolved taste for clothing, music, and social conventions.

In some contexts, changes in preferences are triggered by irreversible transformations of the external environment. A divorce or separation may trigger a new taste and appreciation for single life. Individuals that liked the rural countryside get themselves to like the lifestyle brought about by a residential or commercial development in their home village.

In other contexts, changes in preference are triggered by changes in external constraints. Changes in the external constraint may be generated by law, such as the case of mandatory safety precautions or prohibitions of certain behavior. When preferences adjust to reduce the disutility from undertaking the mandated behavior or the disutility from refraining from the prohibited conduct, laws play a preference-shaping role (see, for example, Dau-Schmidt 1995, 1998).

Given that individuals can change at least some of their preferences, the important theoretical question that remains to be asked is why such a change would occur. In some situations, the need to change may be exogenously placed on the individual, such as an individual who is shipwrecked on an island with only coconut milk to drink. However,

for most of the goods covered in Rozin and Schiller (1980), the change would appear to have been undertaken voluntarily.

One reason for investing in preference modification involves fitting in with a particular social group or network. That is, if social interactions and the attendant benefits of belonging to a social network are conditioned on engaging in a certain activity, such as drinking beer in a college fraternity, it may behoove an aspiring individual to develop a taste for beer.² Of course, as suggested by the work of Bernheim (1994) and Kuran (1995), the individual could simply pretend to like beer to reap the benefits of the social network, however the repeated costs of this preference falsification (or, similarly, the likelihood that network members will not be fooled) may make preference modification an attractive alternative.

In effect, undertaking capital expenditures to modify preferences serves as a substitute for repeated falsification. If the discounted flow of falsification costs exceeds the capital expenditure required for modification, the individual will invest in modification instead of engaging in preference falsification. Factors contributing to the relative attractiveness of modification include relatively effective monitoring by the network members, risk aversion on the part of the individual, and low self-denial costs relative to falsification costs.

In the political sphere, there are similar benefits to modifying one's preferences to meet those of the median voter. By doing so, an individual ensures that all collective decisions will conform to his ultimate, if not necessarily his inherent, preferences. Thus, he reduces the risk of being part of an outvoted minority that gets exploited by the

² For a more developed discussion of why groups condition membership on individuals' exhibiting certain characteristics and preferences, as well as why it is beneficial for individuals to provide evidence of satisfying the conditions of membership, see, for example, Carr and Landa (1983).

winning majority in a democratic system. In contrast to the case of social networks, preference modification and preference falsification are not substitutes in the world of politics. While Kuran's (1995) examples show how individuals may falsify their preferences to avoid retribution from those who would be their political rivals absent falsification, to really derive utility from political choices, an individual's preferences must coincide (or not differ substantially) from the collective choice.

IV. Rational Conformity

For simplicity, assume that an individual lives for two periods. In period one, he is not a part of the dominant social network. In period two, the dominant social network observes with perfect certainty whether or not the individual likes to consume good x . If he does not enjoy consuming x , the network imposes a cost on the individual such as shaming him or barring him from receiving the network's benefits.

In the trivial case, an individual with an inherent preference for x will act according to his original taste and automatically avoid censure from the group. However, the more interesting case involves the individual who naturally dislikes x but wishes to avoid group censure. If effective preferences are malleable, albeit at some cost, the individual will obviously undertake any cost of preference adaptation up to the cost of the group's punishment.

To add some realism to the problem, while retaining the two period structure, we move from all or nothing network inclusion to a situation where the sanction imposed on an individual by the network in period two is an increasing function of the distance between the network's favored value of x in period two (x_{G2}) and the individual's

effective desired level of x in period two (x_{i2}). Further, the network's favored value of x is stochastic, such that $x_{G2} = x_{G1}$ with probability p and $x_{G2} = x_{i1}$ with probability $1 - p$ where x_{i1} is the exogenously determined initial preference over x for the individual. The individual has some cost function C which represents his cost of adaptation and it increases in the distance between his initial preferred level of x and his effective preference for x in period two.

If we assume that the network sanction S is proportional to the square of the differential between x_{G2} and x_{i2} and the adaptation cost is proportional to the square of the differential between the individual's inherent preference x_{i1} and his induced preference x_{i2} , the cost minimization problem is as follows:

$$\text{Min}_{x_{i2}} p \cdot S \cdot (x_{G1} - x_{i2})^2 + (1 - p) \cdot S \cdot (x_{i1} - x_{i2})^2 + C \cdot (x_{i1} - x_{i2})^2$$

which, assuming an interior solution, generates the following first order condition:

$$\frac{x_{i2} - x_{i1}}{x_{G1} - x_{i1}} = \frac{p \cdot S}{S + C}$$

The left hand side of the first order condition can be interpreted as the degree to which the individual adapts his preference. That is, what fraction of the original gap between the individual's inherent preference and the group preference ($x_{G1} - x_{i1}$) will the individual choose through preference adaptation. An intuitively attractive implication of this decision rule is that the individual's degree of adaptation will decrease as his self-denial cost C increases. Further, the higher the probability that the group preference will remain stable, the greater the degree of adaptation. Lastly, for any $p > 0$, the individual's degree of adaptation is increasing in the network sanction S .

Allowing even more generality, such that the consensus preference takes the form of a continuous variable and the individual exhibits a concave utility function, as long as there is some inertia to consensus opinion such that significant movements between consensus preference at $t - 1$ and t are low probability, the intuitions of the previous results will still hold. Further, given the concave utility function, all things equal, individuals exhibiting greater risk aversion will choose greater adaptation rates. That is, because of the greater certainty, they prefer the lower net payoff from adaptation to taking the gamble that group opinion will move toward their inherent preference. Also, allowing for more generality along the group selection dimension, it is clear that the greater an individual's options outside the dominant group are, the less adaptation he will exhibit. This can be seen even in the simple model above if we interpret the group sanction variable S as the group shutting an individual out of its benefits. If another network is available, the effective cost of S is reduced, implying lower adaptation levels.

V. Conclusion: The Evolving Taste for Conformity

In this paper we suggest that human attitudes of conformism can be understood as the product of human adaptation. In an attempt to maximize their chances of success and payoffs from social interactions, humans tend to follow strategies of preference falsification or preference adaptation. We develop a model of endogenous preferences and self-conviction to show the conditions under which strategies of conformity are likely to dominate. Unlike preference falsification, preference adaptation and conformity impose self-denial costs. By adapting their preferences through self denial, individuals reduce the utility loss that may derive from collective decisions that do not correspond to

their ex ante preferences. Likewise, self-denial allows conformist individuals to receive higher utility payoffs from outcomes that are dictated by external circumstances.

Adapting their preferences, individuals reduce the disutility of complying with exogenous social norms or legal constraints and similarly reduce the risk of being subjected to hostile political outcomes dictated by a winning majority coalition.

The comparative statics of our model show that an individual's degree of preference adaptation will decrease as self-denial costs increase. Since in most circumstances individuals that have more malleable preferences enjoy an advantage over those who resist change, this leads us to formulate a hypothesis according to which meta-preferences for conformity might have an evolutionary explanation, with cultural evolution and group selection leading to a reduction in self-denial costs.

Self-denial imposes a present cost for the expectation of a future benefit. Stable group preference thus foster higher levels of adaptation, since any stability ensures that adaptation costs not go wasted as a result of subsequent shifts in opinion mode or changes in the exogenous constraints.

Further, uncertainty and individual risk-aversion may affect the choice of conformity. By endogenously adapting one's preferences, conformist individuals increase the probability of satisfaction but forego the ideal first best. When individuals do not adapt their preferences, they remain faithful to their original preferences and pursue their first best levels of satisfaction, which however will be achieved with lower probability, rather than adapting their preference to reach a lower but more reachable net level of utility. In the face of such probability-magnitude tradeoff, conformity may be a dominant choice for some individuals but not for others, according to their levels of risk aversion.

Our model of endogenous preference formation would thus suggest that, *ceteris paribus*, risk-aversion should be positively correlated with strategies of conformity and self-denial.

Lastly, conformity is deemed to increase with the magnitude of the network sanction. Individuals that live in communities with low exit (or entry) costs will face lower incentives to undertake self-denial and adaptation strategies. Mobility of an individual from one community to another that more closely approximates his original set of preferences likewise reduces the benefits of preference adaptation and conformity. If other networks are available, the effective social cost of non-conforming preferences is reduced, implying lower adaptation levels. Individuals with greater outside opportunities will thus exhibit less adaptation.

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