

Darwinian Happiness: Biological Advice on the Quality of Life

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ABSTRACT

There is an increasing interest in understanding human behavior from a biological or evolutionary point of view. I believe this perspective on human nature may help us improve the life of the individual, and design a better society. The present article suggests a biologically-based understanding of what constitutes the quality of life, which I refer to as Darwinian happiness. The key concepts are: one, to avoid stress by adjusting the conditions of life to our inborn tendencies; and two, to utilize the reward mechanisms offered by the brain. The concepts and their implications are discussed.

1. Introduction

Happiness is not a typical subject for the biologist to investigate. The term “success” may be as close as traditional biology comes to indicating that something is desirable. Biological success, however, is usually measured as biomass or reproductive potential—the happiness of an individual is only important to the extent that the state of mind influences survival and the transfer of genes to the next generation. Yet I contend a biological perspective is useful for an interpretation of happiness or the quality of life.

When discussing what is good or bad for an organism, it makes sense to distinguish between those in possession of an advanced nervous system and those not. To the extent that it is relevant to discuss the life quality of plants and lower invertebrates, the only appropriate measure is presumably what is beneficial to their biological success. However, evolution has provided the higher vertebrates, and humans in particular, with a feature that invites a somewhat different definition of life quality.

Our nervous system provides us with feelings. The brain thereby gives us the possibility of cherishing more than mere survival. We can enjoy life. Your roses may thrive given the right conditions, but the rose lacks the nerve circuitry required to appreciate the difference between blooming or withering. The owner, of course, may rejoice when admiring the

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flower. I believe our capacity to experience feelings is the most important property to be considered when discussing happiness.

The main purpose of the brain is to create emotions or sensations that direct or influence behavior. The various feelings are products of evolution in the same manner as are anatomical or physiological traits. Knowledge of why we have feelings, and how they operate, is essential for understanding the concept of Darwinian happiness. A comprehension of why we feel good or bad may guide individuals in their pursuits of happiness, and help us improve society.

Modern societies seem permeated with behavioral problems, manifested as violence, abuse of drugs, psychological disorders, etc. Apparently the typical human of today is not content. Biologists find a parallel to such problems in their study of animals in captivity. Experience with captive animals has taught us that the more we can adjust the conditions they live in to suit both the physiological and behavioral needs of the species in question, the more content the animal will be (Moberg, 1985). Unnatural conditions cause animals to behave abnormally—they become aggressive, fail to mate, and have a reduced life expectancy. Morris (1969) suggested that modern society functions as a mediocre zoo for the human animal. The conditions offered by our cities are not in tune with our genetic inheritance.

The purpose of this article is to create a framework that may help us utilize our knowledge of human nature. I shall start (Part 2) by suggesting a possible definition of Darwinian happiness. The definition is designed for the purpose of understanding how human behavioral biology¹ can contribute towards helping us improve our lives, and thus ease some of the problems of modern society. It is not necessarily useful for other purposes. In Part 3, I shall expand on what the definition actually implies. Finally, in Part 4, I shall discuss some consequences and benefits associated with the present understanding of Darwinian happiness.

2. A Definition of Darwinian Happiness

Two principal factors related to Darwinian happiness will be discussed. These are given the labels “stress” and “reward and punishment.” Together they form a basis for the definition.

2.1 Stress

As suggested by Morris (1969), life under unnatural conditions, i.e., conditions that differ from those for which genes have designed your body and mind, is detrimental. The word “stress” may be used to describe this strain or harm.

The concept of stress was introduced by Selye (1956) for the “fight-or-flight” response induced by adrenaline (or related substances). Today we tend to give the word a broader meaning: anything causing emotional or physiological strain is stressful. The suggestion that living under unnatural circumstances induces a measure of stress implies a distinct, although related, use of the word.

For example, people who live in a city have to face a large number of strangers every day. This situation may be stressful in the present sense of the word. For our ancestors who lived in a tribal community, such encounters were rare. We therefore may not be designed to meet this challenge. Coming across an unknown person calls for attention—the mind is inquisitive, and alert. Our natural response presumably entails a mixture of curiosity and fear, and is most likely accompanied by a release of adrenaline. But today we tend to avoid

eye contact with strangers. It is not appropriate to be inquisitive; neither do we have the time. Any fear generated by unfamiliar faces must be suppressed. Thus, seeing a large number of strangers, as well as not being able to respond in the way our inborn tendencies would prefer, is stressful.

The adrenaline response itself is not necessarily unnatural or bad. It is harmful only when it moves beyond the threshold with which the individual can cope. We enjoy thrills that give a more intense adrenaline reaction than the typical encounter with a stranger. The stress in the present sense of the word is due to the high number of encounters, to the situation not being a challenge we want, and to the fact that the inborn tendency to respond is not appropriate in this case.

We are also different from one another, and we are adaptive. To what extent experiencing unnatural situations causes stress, in the present meaning of the word, varies from individual to individual. For some people, facing a large number of strangers is not a problem. Based on our knowledge of human behavioral biology, however, I would expect that for the average human it does involve some stress.

What I postulate is that certain situations, not in tune with our physiological or behavioral constitution, produce a negative effect, here referred to as stress. Examples include physical conditions such as malnutrition and extreme cold, and emotional dilemmas such as living in solitude or lacking close friends. As with the adrenaline response, up to a certain level these situations are not harmful, whereas doses beyond the individual's ability to cope are detrimental.

We do not necessarily feel or recognize the stress directly. The adverse consequences may be secondary effects. It is well known that stress (in its more traditional meaning, but presumably also in its present sense) may compromise the immune system (for a review, see Husband, 1993). Stress is believed to cause a range of psychosomatic symptoms, for example headache, muscle pain, depression, aggression, and general social misadaptation (see Carroll, 1992 and Friedman et al., 1995, for discussions of stress and disease). An important principle is that in order to improve the quality of life, conditions should be adjusted to suit our inborn tendencies.

The present use of the word stress is related to the concept of Darwinian medicine (Lewin, 1993; McGuire et al., 1992). These authors suggest that our understanding of medical problems, particularly those related to psychological and psychosomatic diseases, benefits from knowledge of our inborn tendencies and on how life today differs from life in our original habitat.

2.2 Positive and Negative Sensations

The sweetness of sugar serves as a useful illustration of an important feature of the mammalian brain.

Sugar is "sweet" for humans because fruit was an important part of the diet of our ancestors. For the seeds encapsulated in the fruit, the best thing is to end up in a stool. It is therefore in the interest of the plants to have animals eating their fruit, but not until it is ripe and the seeds are ready to be dispersed. The plant makes the fruit nourishing by filling it with easily accessible sugars. At the same time the color of the fruit changes to signal maturity. The sweet sensation registered by our brains is there to encourage us to take advantage of what the plant is offering (see also Grinde, 1996, for more).

The positive sensation induced by sugar is one example of a general principle developed by evolution for the purpose of influencing our behavior. We are equipped with a complicated set of feelings designed to induce us to take actions conducive to the propagation of our genes. The sweet taste of sugar is a reward conveyed by the brain. The brain is designed to offer a variety of rewards and “punishments” in the form of good and unpleasant feelings. The effect is obvious: we try to obtain the rewards and avoid the negative sensations. The neurocircuits and neurotransmitters involved have been studied by neurologists and pharmacologists in order to understand the abuse of psychoactive substances, treat psychological problems, and control pain (Rang & Dale, 1987; Gardner & Lowinson, 1991; Koob, 1992).

The thrill associated with an adrenaline response, when climbing a mountain or entering a sports competition, feels good because the increase in adrenaline is connected with a reward. When an animal encounters a dangerous situation, the interests of the genes are not served by being situated in a depressed individual with low self-esteem. To ensure that whatever resources the animal may have are mobilized, and that the mood is favorable, the adrenaline triggers a positive sensation in the brain. Furthermore, to seek danger in certain situations is adaptive—for example, in connection with hunting. In fact, drugs such as amphetamine and cocaine presumably act by increasing the level of adrenaline (Rang & Dale, 1987, pp. 568-574).

All vertebrate brains have mechanisms for positive and negative sensations, but humans may be particularly well endowed with such feelings. By giving us excessive intelligence, evolution created individuals with “free will.” Free will gave our ancestors the ability to adapt to different situations, and to find novel solutions to the task of surviving. However, for the genes, free will is a two-edged sword. An ant will always follow the will of its genes, but a human may choose to take actions that are not in the interest of his or her genes. The recent decline in birth rates is one example. Rewards more pronounced than for animals may have been a strategy for human genes to retain influence over our behavior.

A second principle for improving Darwinian happiness is thus to maximize the positive sensations and minimize the negative ones. For this purpose, it is useful to understand the brain mechanisms behind pleasure and pain, and to know what sort of stimuli are required to elicit these feelings.

2.3 Towards a Definition of Darwinian Happiness

To summarize, the two main principles to be used to maximize Darwinian happiness are:

- the conditions of life should be adjusted to human nature; and
- rewards offered by the brain should be pursued and unpleasant feelings avoided.

Darwinian happiness, or quality of life, may be tentatively defined as how well one succeeds in these two tasks.

In recent years, the question of life quality has been discussed mainly in connection with health care, particularly of mental illness (a review is provided by Oliver et al., 1996). An important focus of this discussion has been the question of how to measure life quality for the purpose of evaluating various treatment strategies and health programs. The above definition

is not designed for the specific problems connected with health care, but for a more general purpose. It is designed for creating a conceptual framework, rather than a foundation for quantitative measurements.

3. Expanding on the Definition of Darwinian Happiness

3.1 A Variety of Reward-Offering Activities

In order for us to enjoy life, our basic needs for food, shelter, and health must be met. One does not feel comfortable on an empty stomach. Being deprived of food implies both stress and unpleasant feelings, whereas eating is connected with a reward. Satisfying physiological requirements is obviously important for the quality of life.

Given that the basic needs are satisfied, the most significant factor influencing the happiness of most people appears to be how well we socialize. The more important relations are presumably within the family, but it is also useful to be able to build friendships, and to interact favorably with other people. The importance of associating with other individuals emphasizes the social nature of human beings. Our social life is probably one of the aspects of modern societies that has changed most dramatically compared with our tribal background; we should not be surprised that it appears to be a main limitation to the happiness of many people. It may very well be an Achilles heel for modern society.

To illustrate the problem, we may look at reciprocity, i.e., the tendency to help others but at the same time expect something in return. This is a typical human trait, as discussed by Barash (1982, pp. 134-137). In the tribal setting there were few people, and our cooperative tendencies presumably functioned satisfactorily. The social "contracts" between acquaintances were respected. Today we are forced to deal with a range of people with whom we do not have personal relationships. Obligations are not heeded. One or both parties often feel cheated, or suffer from a bad conscience. Disagreements easily develop into hostility.

Social interactions are typically one of the first elements of behavior to be disturbed when an animal is forced to live under unnatural conditions, as in a zoo. The tendency to form relationships is a vulnerable trait, not just in humans, but in other social mammals as well.

If we are able to fulfill our basic needs and have a satisfactory social life (and harvest the associated pleasures), we should obtain a high score when measuring Darwinian happiness. Furthermore, we have a proper basis for relishing the more "luxurious" utilities connected with human nature—for example, enjoying art, music, and intellectual tasks.

Sport may be considered a luxury in this respect, and is a suitable example. We are equipped with an ability to run because speed of movement is important in connection with hunting as well as escape from predators. For most people, it may add to the quality of life to occasionally move faster, and further, than from the refrigerator to the dining table. There is a potential for both an immediate reward connected with using one's body, and a long term gain in the form of improved health. Practicing to become the world champion in sprint, however, is most likely stressful because it requires more exercise than one's body is designed for. However, participation in sport competitions may give other forms of reward.

Training your body to perform difficult tasks offers the pleasure of mastery and achievement, winning competitions boosts your status, and participating in typical sport competitions can function as a substitute for hunting.

Humans are equipped with a variety of abilities that may be worth utilizing. Using oneself for whatever purposes one is designed, and learning to enjoy whatever rewards the brain may offer while so doing, adds to one's Darwinian happiness. Unhealthy stimulation of the brain is stressful, and may invoke penalties in the brain, whereas healthy stimulation of our senses, inborn tendencies, and abilities tend to induce rewards, or at least avoid stress. The line between what is healthy and what is unhealthy, of course, is not obvious and varies from individual to individual.

Whether an activity is connected with a reward is a question of how broadly the word "reward" is defined, and how well one may enjoy the rewards offered by the brain.² Reading a complicated article involves stimulating one's intelligence. Some people will experience the novel information as a brain reward. Whether one finds the activity rewarding or not, as long as the engagement does not cause too much strain on the brain, intellectual tasks are positive insofar as they entail doing something for which humans are designed. However, the person who is able to tune in to the potential rewards connected with this activity will obtain a fuller measure of Darwinian happiness.

It is not essential to engage in every activity associated with brain rewards in order to have a good life, but a certain versatility may be advantageous.

3.2 The Positive Side of Pain

The pain of cutting one's finger protects our fingers and thus potentially our genes from harm. It follows that there is no reason to suppress the feelings aroused. It is natural to scream and cry. Similarly, loss of someone dear quite naturally evokes sorrow.

Our ability to scream out loud probably has various adaptive functions. We scream to attract attention and thereby obtain help, we scream to warn others of dangers and to scare off predators, and we may scream because it helps us overcome pain. Shouting and crying may therefore be connected with a reward in the brain. In modern society, loud vocalization is considered uncivilized. The positive side of screaming is reflected by the fact that many people seem to enjoy the opportunity when the social restraints are removed, for example in connection with therapy or meditative practices.

Even sadness may be perceived as something positive. People enjoy movies known to make them cry. To understand this apparent paradox, it is again important to distinguish between a harmful event and the associated response. The former is something to be avoided, the latter is a natural emotion. Grief is presumably designed for the purpose of helping us cope with certain unfortunate situations. To the extent that grief has an adaptive function, one should be encouraged to entertain this feeling (see also Grinde, 1996).

As a parallel to the adrenaline response, in a situation of bereavement, survival may be best taken care of if one avoids becoming destructively depressed. It may therefore be adaptive to couple sadness with a reward in the brain. When watching a movie, we can identify with the characters and enjoy the sadness without personally having to go through the harmful event.

The above discussion of grief and sorrow may seem like an odd way of using the word reward. For the present purpose, however, it is useful to extend the meaning of the concept to include certain feelings that have a negative connotation.

3.3 *Hedonism*

All vertebrates are assumed to have brains capable of experiencing pleasure and pain. Not surprisingly, most animals tend to indulge themselves in high doses of stimulants when offered the opportunity. Humans, however, are unique in their ability to exploit the reward mechanisms. Not only have we made a large range of reward-eliciting stimuli easily available, we have also created various substitutes for natural stimulants. If one has money, one can buy products catering to almost any type of reward available in the brain. Abuse has become easy. Fortunately, we have a brain with the ability to make intelligent choices. We thus have the capacity to choose not to abuse stimuli. Our intelligence, however, does not necessarily balance our desires.

Enjoying too much candy causes malnutrition and bad teeth. To avoid this problem we created artificial sweeteners that lack the less desirable effects of sugar, but still generate the brain reward. A similar substitute, olestra, has recently been developed for lipids (Bergholz, 1992). The invention of substitutes is an ingenious attempt at improving Darwinian happiness according to the present definition, as long as the use of these chemicals does not cause harmful side effects.

I have mentioned a couple of examples of how humankind has created products for the sole purpose of harvesting the rewards offered by the brain. Any stimulant that triggers brain rewards is a commercial gold mine, but that does not necessarily mean it increases the average quality of life in society in the long run. The most potent and most dangerous stimulants are the chemicals that activate pleasure centers, for example alcohol and narcotics (Rang & Dale, 1987). Their potential for an immediate boost of joy is well known, but the development of dependency and the toxic side-effects warrant extreme care.

The strongest behavioral rewards the brain offers are probably connected with sex. Sexuality was meant for the production of offspring, and to help pair-bonding the parents for the purpose of securing optimal conditions for the child. No action can be more central to the “wish” of the genes, hence the supreme rewards, and hence the commercial potential.

Sex is an illustrative example of how easy it is to fool the genes. The reward system is directly keyed to urge us to have intercourse, not necessarily to procreate. Intercourse with a contraceptive is therefore as rewarding as without—i.e., our brains happily deliver rewards for orgasms even when the individual is conscious of the fact that the orgasm cannot result in a conception. Evolution moves slowly; it has not had the chance to respond to the invention of contraceptives.

There are typically three problems connected with the abuse of stimulants, whether chemical or behavioral: the long term consequences may be harmful (prolonged use of certain artificial sweeteners is associated with disease), the reward tends to diminish with habituation (the drug abuser requires increasing doses), and the life situation created is not natural and therefore involves an element of stress (commercial sex is not in tune with our inborn sexual tendencies). The invention of substitutes for natural stimuli has the potential of being a blessing, but also a serious problem.

It is rational to seek the pleasures of the brain, but a better long-term optimal strategy for Darwinian happiness thus might be one of modesty.

3.4 Conflicts

The pursuit of happiness for one person may be in conflict with what is good for others. A rape may involve a reward for the rapist, but not for the victim. Fortunately humans are a social species—i.e., our brains offer a reward for being approved by others. Unfortunately modern society does not provide optimal conditions for relying on this mechanism to make people behave. Our societies therefore require laws and penalties in order to guide the pursuit of individuals in directions beneficial to the happiness of the average person.

Presumably our ancestors developed a reliance on hunting for subsistence (Morris, 1994). Hunting is both strenuous and potentially dangerous. Most likely a reward mechanism evolved, motivating people (primarily males) for this task. We no longer rely on hunting to obtain food, but the associated rewards are still there, and we still try to harvest them. For this purpose we have developed substitutes. As suggested by Morris (p. 80), one reason why it is so easy to have men volunteer for wars is that wars function as a substitute for hunting. Our brains offer rewards for the thrills associated with a war, the shooting of enemies has elements of the hunt, and the adrenaline high associated with the danger can be pleasant.

4. Discussion

4.1 The Individual

The satisfaction of the basic needs of life does not require any understanding of human biology. However, there are a large variety of stimuli or events that have the potential of eliciting less obvious rewards. In order to take full advantage of these stimuli, one must be aware of them, able to “tune in” one’s brain to the collection of rewards.

I submit that the above concept of Darwinian happiness may help divert people away from unnecessary reliance on material values in their pursuit of happiness. Although money can buy stimulants, beyond a certain basic level of consumption, most sources of happiness do not require money. The prominent desire for wealth in present society may be linked more with the rewards connected with the status reflected by wealth than with the reward stimulation resulting from the use or consumption of products.

One important source of rewards that is particularly easy to access, and requires no money, are one’s fantasies. Many of the reward-stimulating pathways in the brain are accessible with a bit of imagination.

Narcotics, or related chemical stimulants, cause major problems in many societies. If people were more satisfied, which I expect would be the case in a society more in tune with our genetic propensities, the increase in happiness experienced when taking drugs would presumably be less.

In the above definition of Darwinian happiness, I have distinguished between avoiding stress and obtaining rewards. There is no distinct line separating these two principles. Most experiences considered positive are not as obviously rewarding as sugar or an orgasm. One

feels good in the company of friends. The experience may not be thrilling, but it is natural, potentially stress-reducing, and, in the above Darwinian sense of the word, rewarding.

The connection between stress and medical problems is discussed above. I believe a less drastic effect, but an effect that is more relevant here, is that stress, on the present definition, limits the potential for enjoying rewards. The assumption is that if life is not adjusted to our inborn tendencies, then we are not in a state of mind where we can take full advantage of either the positive baseline of human mood, or the more subtle reward mechanisms.

The foremost principle is thus to adjust the conditions of life to one's inborn nature.

4.2 Society

Our understanding of human behavioral biology concerns the average person. The principles suggested above may therefore be more appropriate for a society than for any given individual members of that society. Each individual is shaped not only by universal human inborn tendencies, but also by his or her particular set of genes, as well as by general culture and proximate individual environment. Acting against our personal biases may involve a measure of stress in the same way as not adjusting to inborn tendencies. Human behavioral biology offers advice on how to behave, but not rules to be followed uncritically.

Society, however, should be constructed with the average person in mind.³ The way of life offered should be as close to our traditional habitat as practical. Life in cities is necessarily different from life in stone age tribes. It is not possible to offer humans both the blessings of a modern society and conditions perfectly suited to our inborn nature. Yet, an understanding of the behavioral biology of humans should help us improve the way we organize our societies.

4.3 Morals

For the international community, it is important to obtain morals that are founded on universal criteria rather than on the heritage of a particular culture. The above ideas on Darwinian happiness may be used as a foundation for ethics that are, at least in principle, independent of culture.

For more than a century, biologists have discussed to what extent morals are an entity developed by evolution or a cultural phenomenon (for recent contributions, see Wright, 1994; Wuketits, 1995; De Waal, 1996). Most authors seem to agree that the basis for morals is the combination of social instincts and intelligence. Morality is an evolutionary adaptation that helps resolve conflicts arising from the need to cooperate even in the presence of conflicting interests. In this sense morality is present not only in humans, but at least in certain other primates, and possibly in social carnivores and cetaceans. The fundamental aspects of morality seems to be influenced by our inborn tendencies, whereas the more detailed manifestations of ethics are based on culture.

A dominant line of thought has been that the ethical rules we can extract from the behavioral biology of humans should form a foundation for a universal ethics. According to this principle, it is morally correct, for example, to help each other because we have an inborn tendency to altruism. One problem with this approach is that the conditions we live in today are different from the habitat that formed our inborn tendencies.

I believe it may be more useful to base ethics on the principle of Darwinian happiness discussed above. The consequences of the two approaches may not differ drastically,

but the above definition of Darwinian happiness possibly forms a more tangible framework upon which to construct a morality.

The ethics I suggest are related to Mill's greatest happiness principle (Mill, 1863/1957). He states that "actions are right in proportion as they tend to promote happiness; wrong as they tend to produce the reverse of happiness" (p. 10). The above discussion on Darwinian happiness offers a biological perspective for this principle.

4.4 Altruism

Altruism is a useful concept for understanding the behavior of certain animals. Ants help their brothers and sisters unselfishly because they are designed to work for the benefit of their common genes. In humans, however, altruistic behavior is probably based, at least partly, on a different mechanism. We have a brain that offers rewards for acts that are to the benefit of others. The rewards are connected with the pleasure of helping others, but they are probably also connected with the status and approval obtained by being helpful. These rewards developed as humans became a social animal. They were conducive to the welfare of the tribe, and thereby indirectly to its individual members. A tribe whose members had strong social instincts fared better than tribes lacking this quality.

One consequence of the mechanism behind human altruism is that the individuals involved need not be genetically related. We help each other because the brain rewards us for so doing. As in the case of intercourse with a condom, these rewards are not restricted to the situations where the behavior is adaptive. We may be rewarded for helping (and thus induced to help) people with whom we have no association—for example, when giving money to support people in other countries.

In the tribal setting, it was easy to see what group one's loyalty should be directed towards. Therefore evolution did not find it necessary to constrain social behavior according to strict criteria. We have the potential for feeling solidarity with any group that we can associate with—theoretically including all humans. Of course, balancing this tendency, we also have a broadly defined inclination towards discrimination and aggression. Handling these tendencies to the maximum benefit of humanity is one of the most important challenges of today.

5. Conclusion

Life on earth was probably never paradise. Our remote ancestors were spared certain undesirable consequences of modern societies, but there were most likely plenty of factors causing stress, for example lack of food, low temperatures, or predators. It is important to learn about our evolutionary history, not because we should reinstate every aspect of our previous existence, but because it offers information that helps us understand how our genes influence behavior. Humans have the potential of creating a society with a quality of life that surpasses both our tribal past and our present societies. I believe an important key to this achievement lies in understanding human behavioral biology.

For many years we have tried to compensate for various detrimental aspects of modern society. For example, we devise equipment to avoid industrial pollution, we develop chemical sweeteners to improve diet, and sport has become the concern of the state in order to improve health. A central political dogma is to create sustainable development, i.e., create an industry that does not deplete resources or destroy the environment. This is

important, but adapting society to human nature may be an equally important principle for improving the conditions of the human species.

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Notes

1. Human behavioral biology is a field of science also known as sociobiology (Wilson, 1975), evolutionary psychology/anthropology (Wright, 1994), and human ethology (Hinde, 1982).

2. It may be argued that following an urge or an impulse is not necessarily connected with something pleasant. I would tend to assume that, with a healthy brain in a healthy environment, following urges is connected to a reward in the broad sense of the word. Anyway, this is a useful simplification for the present model.

3. Biology helps us understand the inborn tendencies of the average person in the average culture. When designing a society, planners need to keep in mind the constraints of that particular culture. Inflicting rapid changes on a culture is stressful, in the same way as it is stressful for an individual to act in opposition to acquired characteristics. Furthermore, society should not only take the average traits, but also the variance into consideration. It is, for example, relatively easy to describe and accept average sexual desires. Society should be open to the fact that sexual desires are variable.

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