

# **Evolutionary purpose of morality - Morality as an integration of passed human adaptation to microenvironment from Bayesian point of view**

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*Moral and ethic issues are often taken as a heterogeneous or antagonistic to evolutionary approach, but some sort of moral rules we can find to be as universal and general all over the world as many other evolutionary topics. This article tries to approach the evolutionary purpose of phenomenon of morality in the sense of tuning of an individual to his particular microenvironment, niche.*

Evolution is said to be lagging after environment, but it is evolution that creates new environments, that have never existed before. A human is definitely a product of evolution, and he creates a new environment not only for him but also for other species around him. Take squirrels as an example, that live in and adapt to atypical environment of a campus. A campus is not everlasting environment like savannas. It is short time environment but anyway squirrels are sort of animal who can profit from it as they can easily and temporarily adapt to it and learn to beg food from by-passers. This way they improve their fitness over other species that are not able such prompt adaptive reaction.

Humans are no exception in this way. They can easily profit and increase their fitness by temporary adapting or tuning to short- and mid-term local microenvironment. But when we go through literature we can find that only little attention was paid to this short-time adaptation to microenvironment, and what mechanisms are exploited to gain additional increase in fitness.

One of those tuning mechanisms is morality, which I understand here as an natural integration of experiences of passed generations. In the following paragraphs, I will show how it works and helps to increase fitness of an individual and how it utilizes added information passed over generations.

Etymology of moral stems from Latin word *mos* and means a custom. So the original meaning denotes just repeating or useful behavior, is probably also much closer to original meaning of real lived and evolving morality than abstract definition from dictionaries: "concisely expressed precept or general truth". So it would be more useful to start from this earlier generic meaning, then from the abstract form of moral theories.

If we want to approach moral rules, we should notice that moral rules are in some way quite stable and conservative but they are slowly changing over time. Different moral topic are more accented in some historical periods. We can understand moral rules as a sort of social and particularly family press, which is intended to direct or lead an individual successfully trough life. That is why the moral texts are full of promises how happy a man will be when he will follow them.

The moral rules are usually given over from older generations to younger. This way the younger generations are to incorporate life experiences of former generations. There is dynamic equilibrium between them as generations are getting older and passing away. New generations are always challenging and criticizing values and moral rules of their parents, but at the same time, they are incorporating them slightly modified in their own moral and value system. These modified rules are given over further to next generation.

Let's take an example of premarital sexual intercourse. In 19th century and mainly in late 20th century we saw a great shift in approach to premarital sex. Why there was such a resistance against premarital sex in previous centuries? The answer can be quite simple when having a look at the socioeconomic situation of a pregnant woman without man's support in industrial town of 19<sup>th</sup> century. So the parental life experience by use of moral, religious pressure try to prevent an unmarried girl from having premarital sex. There has been a big change in socioeconomic status of a single parent since that time. It is still naturally more difficult to rise a child alone than in a pair now, but the single parents are not starving to death as before.

The aim of this pressure is paradoxically very evolutionary. The reproductive success was much higher for a married couple than for a single parent, who usually was suffering by hunger. In one way, morality is apparently evolutionary inhibitors of sexual reproduction of unmarried girls in this context. Opposing headless falling in love, that facilitates a separation of an individual from primary family and entering, foundation of a new family. But there are two evolutionary forces - falling in love and searching stable partner - they are differently evaluated in very short time from evolutionary perspective, so there must be some mechanisms, as morality, that do this fine tuning to very different socioeconomic niches of early 19<sup>th</sup> and early 21<sup>st</sup> centuries. So moral system is not denying these evolutionary forces but rather control them to enhance individual survival and reproductive success.

We can understand a moral forces as an dynamic integrative system which transmit to younger generations experiences and values of older generations, and this way helps to enhance reproductive success of young generation. The other way round, we can estimate a power of particular forces, by taking in account how much damage they can produce and how strong is moral opposition against them. So for example, we can estimate that there must be much stronger both male and female forces to deceiving in Arabic countries, when there evolved such strong moral forces trying to prevent and eliminate any sign of temptation. These forces are seen through covering women, preventing them from participating in common activities with other men, etc. This consideration is of course valid only under presumption that the danger resulting from an unwanted child is not essentially different in Arabic and other countries.

It is important to have on mind that we know about many particular forces, which alone contribute to increase of reproductive success but we still do not have settled down a rules under which it is better to support one tendency and suppress another one in particular niche. Say, as in previous example of unmarried woman - there are strong forces to reproduction (falling in love) but also a big danger of little or none male investment. Morality as an integral of previous generations' experiences is trying to put these two competing points of view in accord. And we can see how this integral has changed over last 200 years in western cultures.

### 1.1 Moral pressure equation

An individual living in some particular niche is observing fitness of people around him, say those who were drug addictive or on contrary who are hard working, etc. He gives them some evaluation - utility function, ranging say from 0 to 1. The same way, he observes and sums over time passing what proportion of his life, his generation or generation of his children is impacted by given phenomenon. This summation results in conviction that is getting usually stronger in time, even when utility function remains stable, because number of observed and remembered occurrences are increasing. This process ends up in a moral example: "Do not drink! Have a look at the uncle Charles! Do you want to end up like him?" or abstract rule: "Drinking of alcohol is addictive." or religious prescript: "God does said: You shall not drink alcohol."

$$(moral\ pressure) = (utility\ function) \times (probability\ of\ occurences, \ i.e.\ power\ of\ temptation)$$

where

$$(probability\ of\ occurence) \approx \sum_{time} (observed\ and\ remembered\ cases)$$

Very rare phenomena are embraced neither in moral rules nor in law system. Say we can find moral oppression of masturbation, as it is common and was believe that it was harmful (probably generalized extreme cases of pathological compulsive masturbation). On the other side, almost none would warn children against trichotilomania (compulsive hair pulling), as it is very rare, even though it impact on individual's fitness might be worse than by compulsive masturbation.

We can also see changing of utility function over time. For instance, there is a lot of discussion regarding impact of so called "soft" drugs as marihuana. These are in true sense attempts to evaluate the utility function of marihuana consumption. Younger generations are more tolerant, as their moral equation results higher - they observe fitness of their friends and cannot see any big harm at their age. As they will see with age more cases of personality decline in result of drug abuse, they will be less and less tolerant to any drugs. Although they may be more tolerant to marihuana than their parents at the same age, as their utility function may have to end up with higher evaluation because of a personal experience with it in their youth. The same way, Mohamed ascribed a different utility function to alcohol drinking, as he saw probably his neighbors, when Koran prohibits it.

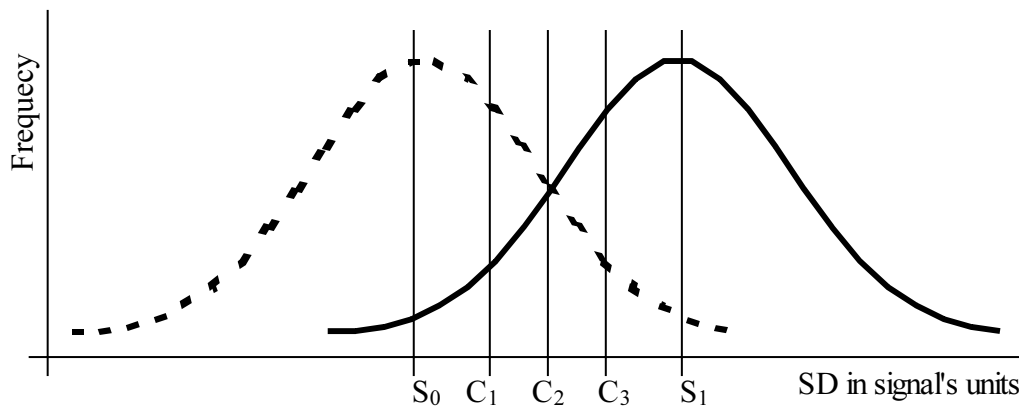
This way, the experiences are summed up over whole population, probably in following suggested equation, and produce general social moral pressure:

$$(general\ social\ moral\ pressure) = (average\ fitness\ of\ those\ who\ committed) \times (prior\ probability\ of\ occurence)$$

### 1.2 Moral equation and Bayesian natural selection

From point of view signal detection theory, the passing memories of previous generation to a new one, is a signal with some internal and external noise, and leads therefore into Bayesian decision process, which can be easily unified together with the previous moral equation.

It is probable that any new source of valuable information increase fitness of those, who are able to receive this information. Absence and presence of signal leads to different, sometimes mutually exclusive conclusions. Say presence of signal "danger" is opposing its absence that might be interpreted as "search for food".



The curve with maximum in  $S_1$  is showing internal human reaction to present signal ("danger, escape signal"),  $S_0$  ("collect food signal") represents distribution of reactions to absent signal  $S_1$ . These two distributions are overlapping in some amount, which characterizes badly interpreted signals of  $S_0$  and  $S_1$ . These bad interpretations always lead to a diminished fitness of the individual. False alarms ends up in lost of food, misses in deaths.

There are two basic possibilities how to improve fitness of an individual. First increase so called  $d'$  - the distance between signals  $S_0$  and  $S_1$ . The better we are able to distinguish signal from the noise, the less overlapping. How to do it? Of course by formal or informal research and investigation.

But such approach is not always possible. For example have a look at infectious diseases. Their cause and ways of dissemination was mostly unknown until discovery of a microscope. In a different way, children at a given state of development are simply not able to do it (say distinguish between toy gun and father's real gun).

So there is another approach than manipulating  $d'$  - noise to signal distance. It is shifting of criterion. And it is exactly the moral equation noticed above: a product of utility function and prior probability of the signal. In real evolution, both approaches take place at the same time: Increasing of ability to detect signals (increasing  $d'$ ) leads to changing criterion. Let's have in example by comparing two advises:

Lousy superstition: "There are hungry ghosts in the slew." This rule (changing criterion) does not increase signal to noise ratio ( $d'$ ), but is minimize deaths which are more detrimental for fitness of an individual than lost of food. But imagine, that someone else is given this rule: "If you go into the slew, do not go after dusk, take a long stick to prove the ground in front of you, and look for a darker grass, which indicates firm ground." Such rule (changing  $d'$ ) can provide much more successful exploitation of fauna and flora in the slew, and saves individual life at the same time. But as was said earlier, such a rule requires particular maturity level, sometimes lot of other knowledge, and there are sometimes whole epochs in history when such knowledge in particular area is not available. Then importance of the criterion manipulation grows up in such cases.

### 1.3 Tuning of individual to particular niche

An individual in world has many choices. Even if we stay in a realm of evolutionary framework, we can see that there are many opposing and mutually exclusive tendencies, which are differently useful in particular situation. Some of them might be even dangerous for an individual in his particular situation, even when it is an adaptive evolutionary tendency in general. So there is a lot of desirable goals from the point of view of the individual.

The younger a person is the more things in his realm are unrelated. The older he is the more he has had to choose from two more mutually exclusive choices. All such decisions bring with them also a feedback and lead to some moral rule or example. There is a very old example of such personal development that influenced hundreds of generations. It is story of Jacob, son of Isaac, who in his youth used a lot of deception, and also his name Jacob meant supplant (Gen 27, 36). But as he grown older and was himself supplanted many times by his father in law, Laban. As older, he started to deal with other people, e.g. his brother Esau, without deception - openly and directly. This story started as a personal experience, but turned into a moral example and rule for many generations, how to cope with a dilemma between deception and cooperation.

What was said above is fairly general theory that can be applied to all moral systems. All moral systems intend to increase success of an individual, even when it can be understood as an inclusive fitness. So we can find in all moral systems some fairly generally defined goal. This goal accentuates some general life perspective and along with it there are many other supplementary rules that exemplify the application of the general goal to particular areas of human life. For example, Christians pursue God's kingdom, but along with this they have a bunch of regulations, which define meaning of the goal in particular areas: General prescription

of love, regulations in marriage and sex, human life, private property, etc. Marx-Leninist ideology strives to establish social equality - communism, which is to be acquired by a revolution, taking power by communist party in the particular country, establishing temporary socialistic system, which should slowly grow over into communism, etc.

It might be useful to note that fact that some rule or goal is general does not mean that it is less important. It means rather that its influence will be weaker, but spread wider in time and space. In ancient time the work was work considered as something of low value, something which is suitable for slaves. A free civilian was supposed to be free of work. Christianity slowly changed this evaluation of work (utility function). We can see St. Benedict in 6<sup>th</sup> century promulgating the maxim: "Ora et labora" (Pray and work), which is something scandal like, as it says that even noble people or king are supposed to work otherwise they are not going to be perfect. Of course Benedict's rule is fairly general, but we can see how different approach to work and knowledge in western countries.

All these rules and moral examples are to be understood as evolutionary shaped tools, that are intended to increase probability of adaptive Bayesian decision in poorly defined conditions of human life. They serve in this process as a criterion, defined as a product of utility function and prior probability of a particular act.