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Biological motives

The instincts and strategies governing our behaviour have been developed during the whole evolution of human kind and all their ancestors. They belong, as an integral part, to the complicated complex of different morphological, anatomical, physiological, ecological and ethological adaptive mechanisms. They allow us (as well as our ancestors) to solve problems of survival in an enormously complex system of inter- and intraspecific relationships between living organisms and their inorganic environment. The most important instincts and strategies had to be formed in the earliest past of evolution of all animals. Similarly as all other evolutionarily old properties and characters, they are common to the majority of animal species and are deeply embedded in our genetic code and subconscious.

Among the evolutionarily oldest mechanisms, the most crucial role was (and still is) perhaps played by the mechanisms that allow the animals to cope with the vitally important problems resulting from the fact that the basal function of all living organisms and whole ecosystems is the transformation of mass and energy. The flows of mass and energy run in a complex web of food chains, in which inorganic substances are synthesised into organic energy accumulating substances, transformed on energy and finally decomposed back into inorganic substances. Their transformation and decomposition are accompanied by a continuous loss of energy.

The sources of energy in nature are limited and difficult to transform into a form useful for living organisms. For this reason, all living organisms from the very beginning of Life on the Earth were confronted with the necessity to economize energy and to use it as effectively as possible. During several hundred millions years of evolution, a fascinating diversity of energy economising mechanisms has developed. Not always successful, but always targeted to energy economising.

They are not only of morphological (hair, feather, body shape, body volume/body surface ratio known as Bergmann's rule), anatomical (subcutaneous fat layers), physiological (more effective use of nutrients contained in food, accumulation of substances rich in energy, different reproduction strategies) or ecological nature (different trophic relations – the relatively risky eating of only one food kind contrasting with more secure eating of almost anything or the relatively ineffective searching for food contrasting with different forms of comfortable parasitism), but also of behavioural nature. The behavioural stereotypes (sleeping or maximal reduction of all physiological processes during inactive periods, different hunting strategies e.g. the effective waiting for a prey in a cover, characteristic of most cats, contrasting with the tiresome chasing the prey characteristic of wolves, wild geese flying in the typical V-shaped formations forming an aerodynamic tunnel making the flight easier) may even have an enormous significance.

All these mechanisms as well as the fact that all animals, as heterotrophic

organisms, are unable to synthesise organic substances as autotrophic plants do and therefore must eat other organisms, also need a corresponding set of instincts controlling these processes.

One of the instinctive adaptations is absence of any feeling of guilt, when an animal is killing or eating a plant or other animal as food. Absence of this feeling is absolutely necessary, because any feeling of guilt would be fatal in this case not only for the organism in question, but even for other organisms staying in a higher position in the food chain. On the contrary, appetite to hunt or collect food is associated with pleasant emotions and pleasant expectations. How deep these instincts root in our subconscious can be demonstrated by the enormous joy and enthusiasm with which we play ice hockey, football and similar games or collect, for example, postage stamps. All these activities represent nothing more than a cultivated sublimation of our hunting instinct. The ball or collected objects are substitutes for the prey. As we see, these instincts manage various offensive behaviours.

The offensive energy economising mechanisms, however, also may be targeted against con-specific individuals. It can be seen in young competing for the mother's milk nipples, in dogs proverbially fighting for a bone or in birds which mutually steal material from the nests being built in the place to collect it. The motivation to steal the construction material is particularly frequent in those species (e.g. penduline tit, *Remiz pendulinus*) in which the nest is built by males and its size serves as a selective criterion for a female in searching for a suitable mate.

However, the behaviour of many animal species is also controlled by instincts whose task also is energy economising, but which work in a "defensive" way. This means the instincts managing territorial behaviour – protection of a territory inhabited by an individual or group of individuals, like a family, nation, etc. Territorial behaviour has the same nature – protecting the occupied food (=energy) sources and avoiding the undesirable spending of energy which would be associated with searching for other sources or which would mean an undesirably increased energy investment into reproduction. For example moving kittens by their mother, represents a preventive escape from a place which could be easily discovered, because of the concentration of the mother's traces around the place of the litter. Similarly many bird species move the egg shells to a certain distance from the nests to make nest discovery more difficult for a potential enemy or even mislead him in searching for food. For the same reason, many bird species cover the clutch with various debris when leaving it temporarily. This instinct and territorial behaviour is the basis for our notion and feeling of ownership and our need to protect it. It is clearly manifested in any field of our daily life – reaching from our sleeping room door (warmth, calmness), name plates on fence gates (food reserves, clothing reserves) to the border guards and custom officers at border passes (food and energy resources). The principle of territorial (or owner) behaviour is a simple equation – protect of energy resources is less energy consuming than searching for other resources.

In individually kept domestic animals, sometimes, signs of invention may

even be observed. For instance, there was described the behaviour of a donkey in a group of donkeys bearing loads on a hill. This donkey, descending the hill, joined the loaded donkeys ascending the hill, by the loading place at the hill foot and, on the contrary, before the unloading place at the hill top, joined the unloaded descending donkeys. In this way it avoided bearing heavy loads and economised much energy.

Defensive energy economising mechanisms also have another nature. They are, to a considerable degree, bound with another field of our instinctive behaviour - fighting for dominance in a hierarchically organised group. Its immediate goal is to take an advantageous position in the reproduction process (or to train taking of a dominant position), while its proper goal is optimisation of the genetic selection within such a group. A collateral effect of the fight for dominance is better access to food and better conditions for reproduction or, in other words, for easier propagation of own genetic information. So it also has some energy economising significance. Fighting for dominance is characteristic for all socially living animal species. It is bound with various dominance manifestations which are usually unpleasant for those group members which have already been subordinated and particularly for those which are still being subordinated. An example of such a manifestation is punishing - a process which also often occurs in human society and the targeted individuals perceive it unpleasantly, and try to avoid it.

Bad feelings, like a punishment (but not only they) are psychological processes also consuming a non-negligible portion of disposable energy. Therefore energy economising mechanisms avoiding situations causing a loss of psychical energy, especially those which are bound with a punishment or impact the dominance manifestation of our partners, have been developed in our communication. The modes, how humans try into avoid such energy losses in different situations are called (in every day speech) lie, deceit, simulation, etc.

Lie, theft, simulation, etc. however, also occur in many animals other than man. Dachshund keepers know very well, how these intelligent dogs can deceive or simulate an illness or wounding to obtain increased attention or fulfillment of a "wish". Simulation of being wounded is generally known in disturbed duck females guarding their young. Simulation of being larger in the pre-conflict situation is known in many bird or mammal species and is fairly reflected in some features of historical military uniforms. Building of a false opening into a nest is known in some tropical birds (weavers), removing of shell from the nests, covering the clutch by debris (see above) or moving kittens are also interpretable as a kind of instinct controlled simulation. How telling a lie is a instinctively and not a rationally controlled energy economising mechanism in humans, may be illustrated by a trivial example - the behaviour of a small child trying avoid punishment (hence psychical energy loss) saying to the mother: "No, I did not do it, but my teddy bear did". Action of many mature people, however, do not essentially differ from this simple example.

Because our behaviour is strongly controlled by energy economising instinctive mechanisms, the offensive mechanisms may prevail over the defensive when expressing our attitude to the lie and similar behaviour. Therefore, the a lie must not be inevitably perceived as negative. We all know very well the term "merciful lie", which is generally perceived as a positive tool to prevent unpleasant (energy consuming) conflicts or psychical stress. This relative attitude to lying reflects the conflicts and variable dominance of the instincts managing energy economising mechanisms and the instincts forming our natural sense for that which we call ethics, moral or natural right.

Significant shifts happened in the behaviour of mechanisms controlling energy flows in human groups, at the moment when changes in the course of human speciation and development of intelligence allowed to increase effectiveness of use of energy sources, (food, clothing, cover) and to make some reserves. At that time, all mechanisms controlling our behaviour turned against the conspecific individuals - members of the own group. The simple intraspecific competition for food was replaced by attempts at theft. The obligatory epistism occasionally shifted to facultative intraspecific parasitism sui generis. Food and clothing reserves substituted the prey or host. The instincts inhibiting negative feeling at catching prey helped to act so as they prevailed over the instincts bound with territorial behaviour.

Chaining of different motivations of such behaviour may be extremely variable, but in principle, all these motivations can be seen as a set of actions of energy economising mechanisms.

At the moment when reserves of food and other goods could be made, the necessity (or suitability) of their exchange arose. This exchange, can again be seen as a form of flow mass and the energy bound in it. Of course, in this process each partner tries to optimise their position, and similarly as in any other accumulation of organic material in nature, attempts to usurp them appeared as a result of instinctive imperatives.

The significant shift happened at the moment in which a necessity of creating a generally accepted equivalent appeared and when, eventually money was discovered as a "general equivalent of all values and means of payment and accumulation". Because the exchanged (paid) values represented nothing other than food (energy source), clothing (energy economising mechanism), dwelling (energy economising mechanism), transport (energy economising mechanism), it becomes obvious that money, when seen from the aspect of ecology, represents nothing more and nothing less than a form of abstracted accumulated energy and, at the same time, a regulator of the energy flow between members of partial human populations (local commerce) and between these populations (regional or international commerce).

In other words, the economy being so often put into a strong contradiction to ecology (precisely said environment protection), is only a specialised branch of production ecology focusing on the study of the mass and energy flows in the frame of human population(s).

In this situation, the effort to gather energy (in the form of food, clothing, dwelling or transport) was transformed into the effort to easily gather the key to their reserves. One possible way to gather it, is the socially unacceptable manufacturing of substitutes for genuine money - money counterfeiting.

From this perspective, money counterfeiting is only manifestation of man's instinctively based and enormously adaptable energy economising mechanisms. At the same time, the very diverse modes of money counterfeiting and the counterfeiters' tendency to make only passable, not perfect counterfeits clearly show, that money counterfeiting is not only motivated by the instinctive energy economising mechanisms, but it itself is also fully controlled by them.

The opinion that money counterfeiting represents a highly specialised and adaptable form of intraspecific parasitism of humans is confirmed by statistical models, which are used to analyse distribution of parasite species in a host species population and distribution of different counterfeit types (substitute for parasite species) in a genuine money type (substitute for host species). Both these distributions are fairly fit by the negative binomial distribution, which is known in mathematical ecology as a distribution typical just for quantitative parasite/host relationships.

From the viewpoint of human evolution, money counterfeiting can be considered as a manifestation of some deep discrepancies in evolution of the instinctive and rational sides of human psychics. Individual components of our instinctive equipment, from which our feeling for natural right also originates, conflict among them and in addition with reason controlled behaviour.

Such conflicts are solved by richly structured social rules, education and the extensive institutionalised repression system. However, simple forms of similar repression mechanisms also exist in other animals. For example, if a male penduline tit observes stealing of the nest material by other males he undertakes a strong counterattack to defend his own nest. In hierarchically organised mammal species, the hierarchically higher males punish the lower ranked individual by manifestation of copulation movements.