

## LEARNING FROM ANIMALS AND INTELLIGENT GROUPS

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***Summary:** Physics, Biology and Medicine claim that self-organizations, i.e. man, animals, plants and the cosmos today represent the most perfect systems created by nature. They are products of nature and function on the basis of natural laws. Self-organizations have proven to be most able to respond to changing circumstances and situations in which they can find themselves, as follows: self-reactions, self-defense, self-regulation, self-management, etc. Many regulations of functioning of self-organization can be transferred to organizations. Nevertheless, the problem is that man is not yet sufficiently able to get to know the functioning of self-organization, and especially the brain and its relation to other parts of the body. Of course, over time, man discovers anatomy, physiology and general functioning of self-organization, which creates conditions for the business and other types of organization (business enterprises, institutions, etc.) to be designed, built and operated on the principles of self-organization. The aim of this paper is to point to the possibility of applying the laws according to which self-organizations function upon organizational systems. Studies of self-organization and the analogous application of established principles within the organization are both parts of the learning process which determines business or any other performance.*

***Keywords:** learning, intelligent groups, self-organizations, biomimicry*

### 1. INTRODUCTION

We must be aware of the fact that the world lives in permanent crisis. They are now more often, last longer and have destructive effects in relation to the past. One of the reasons for this is that for a long time now we have applied classical concepts of organization and management that are unable to respond to new challenges and increasingly complex problems. Certainly, in the past, the classic concepts organizations have made significant contributions in relation to the previous modalities of governance. But, in the present conditions they cannot be successful. This conclusion is logical because always when man tried to solve certain problems through outdated concepts he was not successful in doing so. Problems arose because of the application of inadequate or outdated concepts. Further, it will happen in the future in much more drastic form.

The solution for the current situation is that the classic or mechanistic concept of organizing and managing organizational systems be eliminated or marginalized; instead, we should impose biologist, or a medical concept. These concepts are indispensable in times of turbulence.

Introducing biological-medical concept in organization and management would greatly increase the business performance of organizational systems in conditions of great turbulence and uncertainty. The benefit is definitely higher, considering that man needs no financial support to gain knowledge regarding both animals and humans. He only needs to observe and conclude. Also, it takes the ability of management structures to implement existing knowledge in organizational practice. The key thing is to determine a way of learning from animals and intelligent animal groups. It turns out that one can learn even from geese, which are apparently considered to be unintelligent birds.

## **2. HOW TO LEARN FROM ANIMALS AND HOW ANIMALS LEARN FROM MAN?**

Man is the only living creature able to learn, acquire habits and forget what he learned. Further, he is able to forget things he had learned. This feature we can find in no other living creature. Because of this, man can ensure his own survival, as compared to other animal species. It turns out that the previous constation is certainly true because man has no great power, no powerful claws, no great speed, no strong jaws, or any of similar characteristics present in other animals. Man survived because he socialized with other people and used his reason, but also because he used the collective mind. The man has the ability to learn from others, from himself or from animals.

In other words, man has survived thanks to learning and collective intelligence. This way we arrive at the conclusion that – eventhough humans live in urban conglomerates today, with a specific culture of life and work – man still exists on his congenial hunter's or gatherer's mentality typical of Stone Age. Homo sapiens first appeared on the savannah plains of approximately 200,000 years ago. Today, people are still in search for those characteristics that had made survival possible then: instinct, readiness to be brave and to fight when danger strikes. Evolutionary psychology explains this situation with the following verdict: 'You can take a person out of Stone Age, but you cannot take Stone Age out of a person.' [1] Darwin's theory of natural selection is based on the claim that 'bigger animals swallow smaller animals.' After Darwin's death, this scientific claim had been upgraded with modern discoveries in the field of genetics. Evolutionary psychology has, thanks to convergence methods of research, came to the conclusion that human beings retain the mentality of their ancestors from the Stone Age. Darwinism explains how and why human beings share with other types of animals certain biological and physical properties such as, for example, thumb movements and visual acuity. Evolutionary psychologists use the theory of natural selection to explain the workings of the human brain and the dynamics of human groups. According to these scientists, if evolution had shaped the human body, it must have shaped human mind too.

### **2.1. Learning from a pack or herd of animals**

Man learns from animals. Evolutionary psychologists found that in the same animal groups there are large individual differences, i.e. that there are no two same animals on

earth, which is a feature present in all other self-organizations too. Every single animal is an individual for itself, according to anatomical, physiological or mental characteristics. However, any animal, or any self-organization has its own mind, i.e. intelligence. Thanks to this feature, animals (just like humans) receive information from the environment; then the information is submitted to their undeveloped mind that will respond to the principles of embedded genetic code. A typical example of this assertion is the behavior of a dog when he wants to bury a piece of meat at a certain place, or when multiple pieces of meat should be buried in different places. When burying meat in several places, those places remain recorded in undeveloped mind. When he experiences hunger, the genetic code gets activated and the dog can very quickly find a piece of meat on the spot where it was buried. So, burying the pieces of meat (so that present could serve the future) is the forerunner of the modern food storage to overcome the well-known temporal gap. In fact, this example shows how to secure permanent food supply in terms of seasonal production and permanent consumption.

The situation is similar with carrier pigeons. If we take a pigeon out of a cage and take it a few miles from there and then release him, he will do a few laps and get back in his cage. In other words, animals have the ability to locate both places and goals. Today, definition of objectives is considered to be a necessary condition of business success. This area is taught in management science in the early years of the study. Nevertheless, a large number of people in modern conditions are not inclined to define the goals.

Detailed analyzes show that today's market struggles are actually imitations of things that happen in the animal world. In fact, as each herd guards his territory from 'intruders' (leader of the herd or strongest animal in the pack is charged with this job), in much the same way the market place today represents a struggle to conquer new, but also to retain or expand the existing markets. The difference between animal and market battles is that the former do not leave large-scale destruction and impacts on other animals and their groups, while market competition in the world of high interdependence often leaves vast wastelands. For example, Apple and Google cross swords for the operating systems for smart phones and tablet computers. Further, both companies are confronted with Amazon regarding hardware. Google and Facebook have become sworn enemies in this area. These entities have a territory to defend. For instance, Google has a search engine that provides this company with significant advantage over its competitors. Google allocates substantial resources in the development of these devices. In this context, Google has strengthened its defense by adding to the system other services that can help in the search process. This is a battle of life and death, rivalry and conflicts are permanent phenomena where often only the strongest, most skilled survive. These are usually the ones who have the instinct to anticipate a certain risk and to react in time to avoid it. The winners receive laurels and awards, the losers often face 'death'. All of this is actually an imitation of what happens in the natural order, i.e. in the animal kingdom. [2]

## **2.2. Learning between humans and animals is a two-way process**

Man can learn from animals, but animals also learn from man. Also, animals can learn from a man as a coach. Dressage is a typical way of training animals to perform certain act. Through dressage man seeks to enable the animal to mimic man, or some of his specific actions. Trained animals always act in the same way, i.e. in the way they had been trained by the man. They have no alternative but to always act according to the principles embed-

ded in their genetic code. If circumstances change, the animal is unable to react in a different way, in a manner that the situation demands. When a man wants to train the animal for other tasks too, he has to design and conduct a new process of dressage.

Animals have learned to behave well if treated well. Soft words, cuddling, light touches – animals like these things. Animals shall never show their wildness when treated properly. In case of bad behavior, animals will show their “teeth”.

The above indicates and proves that the learning process between man and animal is a two-way process.

Man learned how to live together from animals, observing the functioning of animal groups. In the distant past, man used to dig pits and live in them, analogous to what animals did. Dugouts were similar to burrows and were in the function of protection against other clans or hunting groups. Animal instincts to radical or dramatic changes (earthquakes, floods, drought, or other hazards that will happen) are taken seriously and analyzed in detail.

The situation is similar with the pack animals and a flock of birds. Each pack has a leader, whose signall the pack shall follow. The leader articulates the functioning of the pack, he is often the “guardian” of the territory and the safety of the pack often depends on him. When it comes to the flock of birds, this claim is never put in question. It is well known that migratory birds fly in flocks, or in the form of the letter “V” to help overcome air resistance and thus with the same energy consumption they can travel much longer. It turns out that - if the birds fly in flocks in the shape of the letter “V” – they will fly approximately 71% longer. Thus, the birds that have to flyi long distances are condemned to conserve energy, while birds that live in the yard can afford to be individuals who do not pay attention to other individuals. Birds in a flock communicate with each other and seek to harmonize the dynamics of a flight as a whole. The leaders of the flock, i.e. the birds in the “peak” take turns when they get tired, so they then leave their place to another bird. The leader then returns to the flock in order to take advantage of the “air pocket.”[3]

### **2.3. Learning from ants**

The above indicates and proves that the learning of self-organization, even in the case of primitive types, useful for the organization. Many examples in the animal world confirm this. By observing a colony of ants or bees we can clearly conclude that in them there is a highly organized order, the division of labor and the pursuit of each individual to contribute to a common goal. Ants in the columns of several kilometers demonstrate exceptional organization. As soon as an ant steps out of this system, he collides with other ants, and it is extremely hard to return to the previous order. This is the completely opposite to the existing stereotypes that anthill actually represents a state of chaos and disorder. On the contrary, the anthill operates on the principle of “organized chaos.” As a result, ants ensure their survival. In a state of absolute order, which objectively exists neither in nature nor in the social order, the ants would become extinct, as well as other living beings. This is logical because it shows that the absolute order itself is but the beginning of chaos. Organizations that seek to establish this state are doomed to failure. [4]

Thus we see that today the successful organizations are the ones that operate on the principle of “anthill”, a swarm of bees, flocks of birds. That is successfully organized group where each individual knows his place in the group and acts in accordance with the needs of the group, i.e. the whole ecosystem in which it works. This fact is significant because

these metaphors can be established in the organization of work through various forms of organization, where the emphasis is placed on the unit. Even ancient Greek philosophers claimed that 'parts are important, but the whole is much more important,' and that for the sake of the whole we can sacrifice the interests of the parts. However, this sacrifice of the interests of part (s) only makes sense if sacrificing has a greater effect on the level of the whole. Every self-organization functions according to the above rule. It would be very helpful if this principle is applied more in the management profession.

It was found that in each colony of ants there are various types: leaders, protectors, logistics, etc. Each of them performs a specific role in the interest of the whole anthill. What any ant does affects other ants on the anthill as a whole. Intense activity in the anthill takes place without the existence of a central authority to issue orders and rewards the most successful or sanction those insufficiently subordinate. It would be of great use to convey this knowledge in the management of organizational systems, thus putting classical organizational management into question for positional authority, incentives and sanctions are its basic techniques for achieving organizational success.

Ants are at the same time intelligent and persistent, which has enabled them to live in the ecological system for a long time now. Just how persistent ants are we can conclude when we want to get rid of them in a room. When an ant takes a load that is too heavy for him and tries to take in to the 'central depot,' he will keep trying to do that, approaching the problem from many different angles trying to balance the load. However, if the ant as an individual fails to do so, other ants will surely arrive to help him, to share the burden and succeed in taking the load to their anthill.

It is shown that only a small number of animals and other living beings has listed two above properties. Intelligent animals are often not sufficiently persistent and fast animals are often not strong enough. In other words, intelligence refined with persistence is the basis of every success. Due to these facts, the ants - though tiny and helpless insects - can survive as a species more than other animals, and even very strong animals. Dinosaurs are extinct because they failed to learn and to naturally adapt to new conditions and circumstances. Some animals have become rare species; in certain cases man had to protect them through legal regulations. This will happen with any organization that does not learn or learns more slowly than the environment in which it operates. Ants have been present on this planet for 40 million years now and their remarkable evolutionary success is evident in the collective behavior and their organization. They belong to a group of rare animals, i.e. in the group of 2% of animals that have a collectivity. This phenomenon is known as swarm intelligence. In other words, the complex collective behavior can result in individuals in the system in a consistent execution of a small number of simple rules of the organization Organizations that are built in such a way are much better than those based on mechanistic concept, i.e. on determinism. [5]

### 3. CONCLUSION

Using biomimicry in the organization has a great future. The future will require of us many more intelligent programs. It is a pretty safe assumption, given that research will include swarm intelligence and software modeling. Swarm intelligence is already widely used in the planning and allocation of resources and routes. Other applications in the early stages include networks that have self-organization components and robots that join

forces together. Practice shows that there are many systems and situations in which we can apply self-organization, i.e. biomimicry. Some believe that intelligent programs will indeed replace other types of simulations in the future. It is because swarm intelligence supports individuality, flexibility and entities that can adapt quickly and effectively to the business environment that has been changing rapidly, becoming increasingly uncertain.

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