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Conflict of Altruists and Egoists: New Paradigm for Environmental and Social Sciences

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Abstract:
The study of the interconnection between genetic and cultural evolution, often called dual inheritance theory, became a dominant problem for scientists working at the intersection of environmental and social sciences in the second half of the 20th century. At the same time, the philosophical and methodological aspects of the new ecological and social paradigm of research are still uncertain. Below is justified the view that the missing part of the new paradigm should be a theory of conflict. Since C. Darwin, the driving cause of the evolution of living organisms was seen in the instinct of self-preservation (selfishness). The purpose of natural selection was conceived as an improvement in the degree of fitness of an individual organism and indirectly in te species as a whole. However, P.A. Kropotkin in the work "Mutual Assistance as a Factor of Evolution" drew attention to the fact that altruism and the cooperation of organisms are no less important for their survival than egoism. R. Dawkins in the work "The Selfish Gene", which became a bestseller, made the general discovery of evolutionists geneticists - the conflict of altruists and egoists is already embedded in the genetic program of the evolution of all organisms. R. Travers has proved that sexual reproduction and selection are also based on the conflict of egoists and altruists. The creation of the evolutionary theory of games by J. Smith allowed to generalize the rivalry of egoists and altruists to a strategic level and to understand why only in competition with each other these behavior programs ensure the stability of the entire population. The principle of the "Red Queen" of the L. Van Valen justifies the necessity and sufficiency of antagonism as the eternal driver of the "evolutionary arms race". Finally, the "Tragedy of Communities" of G. Hardin explains the evolutionary defectiveness of egoism and altruism as the only motives for social development. Combining all the above discoveries, we conclude that the theory of co-evolution cannot be built neither on the only Darwinian principles of survival of the fittest, or on their sociocultural reinterpretation. We need a new paradigm that openly recognizes the conflict of egoists and altruists as the main cause of co-evolution at all levels of the organization of living matter.

Keywords: conflict; evolution; co-evolution; altruist; egoist; natural selection; sexual reproduction and selection; game theory.

JEL Classification: Q56; Q54.

Introduction

The nature of environmental and social evolution cannot be explained, recognizing only the facts of the struggle for existence and ignoring no less numerous facts of altruism and cooperation. In order to combine both series of these facts in one model, it is necessary to assume that environmental and social evolution is initially contradictory, that it has complementary and therefore equally inextricable opposites - egoism (the desire for self-preservation of the organism) and altruism (the desire to preserve the species). Let us call the conflict between these opposites the basic conflict of evolution.

Conflict is the leading concept of the new paradigm of evolutionary environmental. Its precise definition follows from the fundamental theorems of the unified theory of conflict (Svetlov 2012, Svetlov 2015). Here we confine ourselves to an informal explanation of its nature and evolutionary purpose.

Each really operating system has a certain activity aimed at preserving itself. But since all systems are limited in their resources, they can solve this problem only by interacting with other systems. At the same time, the activities manifested by them, joining in a certain way, correspond or do not correspond to each other in two independent senses - in direction and in sign, symbolizing one of the opposite modalities of the type "likes" or "hates". This means that the activities of the systems are, firstly, vector and, secondly, the indicated values, and when they are added, the result of a combination of directions, signs or both of their actions should be taken into account. If we take into account all this, it is easy to prove that the connection of systems can have three and only three different forms - conflict, synergism and antagonism, the last two of which (synergism and antagonism) represent opposite solutions to any conflict. Both of them are opposite to the conflict, but they are also incompatible with each other.

As a systemic phenomenon, conflict serves as a very important mechanism in the processes of self-organization of nature. Due to conflicts, the evolutionary inertia of the former synergetic and antagonistic relations is broken, new connections arise, the genetic, organismic and species diversity of nature is constantly renewed.

Synergism and antagonism are two opposite forms of conflict resolution. They differ in that synergistically interacting systems simultaneously begin to progress or regress. Antagonistically interacting systems are divided into two negatively connected poles (blocks), one of which begins to progress, other – to regress. Moreover, the elements of both systems are connected with each other synergistically. For reasons that will be clear below, antagonism is the leading form of resolution of all evolutionary conflicts.

The definition of the basic conflict of evolution is the beginning of all beginnings. All the rest is its consequence. The essence of the basic conflict of evolution is based on the specific nature of the process of evolution, the continuation of living beings of a kind. Evolution is not identical to simple copying, an absolutely complete replication of the original, it arises only where the process of the formation of new more perfect and adapted species take place. In the evolutionary process, each new species borrows the genetic material of its parents, but simultaneously modifies it according to the principle of natural selection. Evolution is not copying, but reproduction based on recombination, creating new combinations of genes. Evolution and multiplication are interdependent, even synonymous terms. There is no evolution, where is no reproduction. There is no reproduction, where is no evolution.

All living organisms, following the instinct of self-preservation, tend to reproduce according to an exponential law, *i.e.* endlessly reproduce itself without limits. However, this desire sooner or later faces the limited resources for existence and the impossibility of the survival of all who are born. The discrepancy between reproductive capabilities of organisms and available resources in their satisfaction becomes the reason for the process, which is called evolution, the competition of organisms whose sole purpose is to survive the fittest in the struggle for the reproduction of their genes. Now this is a common opinion among evolutionists. Note that this understanding of evolution differs significantly from the opinion of Charles Darwin, who believed that evolution is the survival of organisms most adapted to the struggle for existence.

1. The basic conflict of evolution. Definition and purpose

The evolutionists pay much less attention to the fact that evolution is a contradictory process and it is characterized by a certain conflict of forces. The reason for the conflict is the dual nature of the instinct of self-preservation and the process of reproduction that it caused. On the one hand, every instinct of self-preservation acts as the law of self-preservation of an individual organism, on the other, as the law of species self-preservation. In accordance with this division, multiplication is the result of the action of two opposing and inextricably related forces. The first force prompts each individual organism to act solely in the interests of its own reproduction. This motivation is usually called egoism. The second force forces the organism to act in the interests of preserving its species,

sometimes even at the cost of its own death. This motivation is usually called altruism. The contradictory unity of both oppositely directed and simultaneously acting forces forms the basic conflict of evolution.

The concepts of "selfishness" and "altruism" in evolutionary environmental are different from the one used in moral reasoning. The specificity of both concepts is connected with their relationship to the process of reproduction. Selfishly behaving is an organism that is concerned with increasing the degree of its own reproduction; Altruistically - one who reduces (sometimes to a minimum) the degree of its reproduction for the sake of increasing the degree of reproduction of other representatives of its species. Egoism separates the members of the population, but at the same time it is the basis of private initiative, entrepreneurship, innovation. Altruism, on the contrary, unites organisms, it is the basis of the social way of life. Without altruism, cooperation, mutual assistance, language, culture and modern social institutions would not be possible, *i.e*. all that is called social progress. At the same time, altruism limits the manifestation of personal initiative, sacrificing it to the achievement of the interests of the species.

If selfishness and altruism are inextricably linked opposing forces of evolutionary conflict, then how is the stable coexistence of the members of the population possible? Does such stability mean gradual displacement of altruists by egoists or vice versa? As will be shown, evolutionary stability arises only when there are both egoists and altruists in the population and they alternately dominate the dynamics of the population.

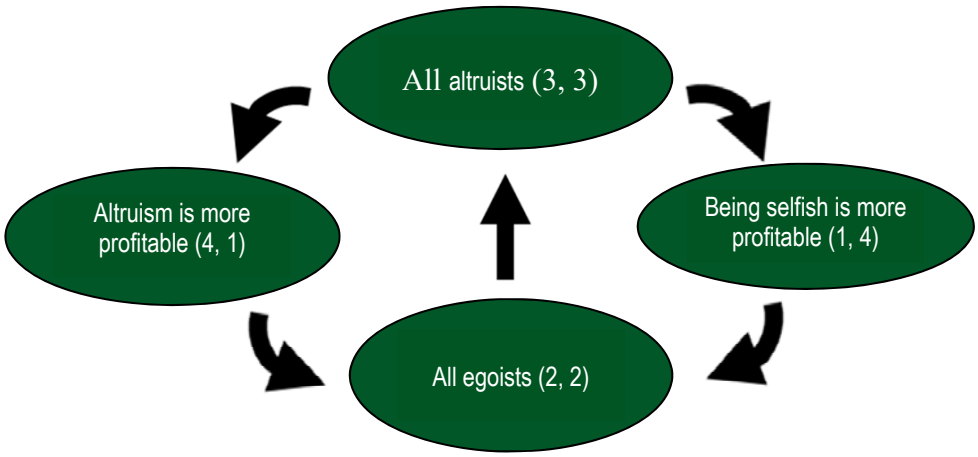
The most unexpected thing about this is that evolution stops where all members of the population are either egoists or altruists. The first possibility corresponds, according to the figurative expression of the English philosopher of the XVII century Thomas Hobbes, "the war of all against all" means an evolutionary impasse leading to a general loss and decline. The second possibility, because of the limited resources, is utopian in the sense that the coalition of altruists is a fundamentally unstable community and easily loses the evolutionary race when there appears at least one selfish person in it. For the stable existence of a population, innovations are needed and, consequently, egoists. But the stable existence of the population also needs the cooperation of its members, *i.e*. altruists. The unification of egoists and altruists generates a stable process of changing their dominance and thereby stable dynamics of the population.

The peculiarity of the basic evolutionary conflict, which can be called paradoxical in a certain sense, is that the antagonism of the population's organisms appears to be the dominant form of its resolution. As noted, the struggle for access and possession of a limited resource of subsistence for living beings is the only means of their existence and successful continuation of the genus. The one who owns the resource is the most capable of spreading its genes. Genes, bacteria, mono- and multicellular organisms all solve the basic conflict in the manner indicated by Darwin; they join each other in the struggle for possession of the resources of existence (Darwin 1987). Such a struggle means, in the language of conflict theory, that an evolutionary conflict that moves all living nature is resolved in an antagonistic way. The reason for the dominance of antagonism in nature is easy to understand - in conditions of limited resources, global synergy of organisms is impossible. Living creatures cannot reproduce without improving their strategy of adaptation in an endless race with their victims, enemies and parasites. The struggle for existence is a constantly improving intra- and interspecific antagonism.

The problem is that the existence of egoists and thereby antagonism, rivalry, and competition is compatible only with the principle of natural selection, discovered by C. Darwin, and his concept of evolution. The existence of altruists and the principle of synergism that justifies it seem, at first glance, to be contrary to the principle of natural selection. In fact, there is no contradiction. Moreover, there is a complementarity relationship between antagonism and synergism. The concept of evolutionarily stable strategies strictly proves this fact (Smith 1982). You can recognize for the initial given egoism and try to solve all the problems of evolutionary environmental, based on the priority of this particular trend. It is possible, on the contrary, to accept for the initial given altruism and to explain all environmental phenomena in its terms. But it is possible to act dialectically - to recognize the existence of egoism and altruism as two opposite and complementary evolutionary forces. This third way is methodologically most effective for one extremely important reason: no force in nature in the natural state never acts alone and is always balanced by retroactive force.

As a mathematical model for studying the relationship between egoists and altruists, the well-known game "Prisoner's dilemma" is best suited. It reveals the reasons why the cooperation of players from an unfavorable survival condition turns into an advantageous, although unstable one. The basic conflict gives a plausible explanation why in any population its members cannot be all egoists or altruists only (see Figure 1, in parentheses are payments of agents of evolution in accordance with the payment matrix of the game "Prisoner's Dilemma" (Axelrod 1984, Lumsden and Wilson 1981).

Figure 1. Payments of agents of evolution in accordance with the "Prisoner's Dilemma" payment matrix



Evolution from the point of view of its basic conflict is an oscillation of the epochs of synergism (altruism) and antagonism (egoism) of the members of the population. As soon as the community of altruists is formed, egoists, capable of unilaterally increasing the degree of their adaptation, will necessarily appear in accordance with the logic of the "tragedy of common resources". But by weakening the community of altruists or even destroying it as a result of their evolutionary innovations, egoists sooner or later become convinced that they have all lost. Then there are new altruists who form a new team, put forward new social projects of the communist type, create new social institutions and win the next stage of evolutionary selection. After that the whole cycle repeats.

2. The basic conflict of evolution and the principle of the "Red Queen"

Synthesis of genetics and the theory of natural selection in the first half of the twentieth century led to the emergence of a synthetic theory of evolution. The new theory made it possible to clarify the conditions for the operation of Darwin's natural selection principle. It was found that evolution requires the fulfillment of three conditions:

- new variants of genes must constantly arise;
- the genetic material of parents must be redistributed in the offspring;
- all organisms must be prone to natural selection.

The hypothesis of Charles Darwin on the antagonistic nature of the action of natural selection has been mathematically substantiated. In particular, it was clarified why the antagonism of organisms of different species allows not only to maintain a fairly stable equilibrium in the population, but also contributes to the formation of new more complex and perfect organisms. A significant role in explaining this fact was played by the discovery, known as the "Red Queen" principle of L. Van Valen (Van Valen 1973).

The content of the principle of the "Red Queen" is shown in the following four statements. First, in a population of competing species, increasing the degree of fitness of one species (victim, host) leads to a decrease in the fitness of another species (predator, parasite). Secondly, in order to survive, each species needs to increase its degree of fitness at a speed greater than its competitor's similar speed. Thirdly, the antagonism of species, for example, hosts and parasites should lead to a stable oscillation of their propagation frequencies according to the scheme: more parasites - less hosts; Less hosts - fewer parasites; Less parasites - more hosts. Fourth, the most important environmental factor for each species is other species, because they are all connected by a close network of relationships. Therefore, evolution proceeds at a constant rate, regardless of changes in climate and other physical factors. It also follows from this that the principle of natural selection does not in any way prove the direction of the evolution of organisms from the lower to the higher stages. It should be noted that Charles Darwin was already inclined to the same opinion. Van Valen formulated the principle of the Red Queen in the form of a statistically significant statement and provided numerous data in its defense. However, this statement is just one of the possible special formulations of the principle of antagonism. The general meaning of this principle does not change: any progressive change in one species in a population leads to a deterioration of conditions for other species and in order to survive, all species must evolve together and continuously.

Thus, the principle of the "Red Queen" is an evolutionary version of the antagonistic form of solving the basic conflict of evolution. In the specialized literature is often referred to as the principle of the "evolutionary arms race". As one of the varieties of antagonism it should be evaluated.

3. The basic conflict of evolution and the concept of evolutionarily stable strategy (ESS)

The assertion of the "Red Queen" about the possibility of evolutionary stability of the population, regardless of the instability of its individual members, was rigorously mathematically substantiated in the book of the English geneticist J.M. Smith "Evolution and Game Theory" (Smith 1982).

The evolutionary theory of games is based on the assumption that the genetic program (genotype) and the actual behavior of an individual organism (phenotype) represents its strategy in an evolutionary game where the fitness of players is an expected payment and where each organism seeks to maximize it.

Suppose that all individuals of the population use the same strategy (Dawkins 2006). Suppose that as a result of mutations appeared an organism that uses a different strategy. Suppose further that after the appearance of the mutant, only a small number of individuals began to use his strategy. Under these conditions, the strategy of most of the population's organisms will be considered stable if the strategy of any mutant that may appear in the population will a priori have less reproductive success. As a consequence, natural selection after some time will destroy all organisms that use mutant strategies. This means that after a certain decrease in the level of stability, the population returned to the maximum stable existence by virtue of the desire for self-preservation and through natural selection.

Suppose members of some population use two and only two competing behavior strategies - Pigeons (peaceful solution of problems) and Hawk (power problem solving). Each member of the population can be either a Pigeon or Hawk. This means that each member of the population, depending on the circumstances, is able to apply the Hawk or Pigeon strategy. If he is a Pigeon, then he quickly retreats in a collision with the Hawk; In a collision with another Pigeon, either they either diverge at once or for some time intimidate each other, but they never take real action against each other and do no damage. If the member of the population is the Hawk, whoever he encounters, he seeks to win only victory. The hawk does not stop before causing damage to another member of the population, even to death.

If two Pigeons meet, both keep their lives, although they can long to frighten each other until one of them gets tired or decides that he should not continue the confrontation, but rather retreat. Meeting Hawk with Pigeon forces the latter to quickly retire and thereby save their lives.

Suppose a population consists only of Pigeons and in it accidentally, as a result of a mutation, the Hawk appeared. Since he is the only one and his opponents are only Pigeons, the Hawk always wins and his genes quickly spread in the population. But the more Hawks are born, the less likely is the Collision of the Hawks with Pigeons. In the extreme case, when the entire population turns out to consist of Hawks, fights occur only between them. This radically changes the state of affairs. Hawks are forced to fight only with the Hawks. The average win of each is minimal and this strategy ceases to be attractive. Therefore, if in a population consisting of Hawks, one Pigeon accidentally appears, the average gain of which is minimal, its genes will begin to spread rapidly in the population and after a while they will reach saturation point - all members of the population will turn into Pigeons. The circle closes, since this conclusion returns us to the beginning of the reasoning.

In fact, there is no extreme oscillation in the propagation of genes. The ratio of Hawks and Pigeons in the population will stably hold to about one single mean. In other words, selection will not give preference to either one or the other strategy of behavior.

The most interesting consequence of the discovery of evolutionarily stable strategies is confirmation of the evolutionary instability of populations consisting only of altruists or only egoists. In populations whose members use competing strategies such as Pigeons and Hawk, it is impossible that everyone is just Pigeons (altruists) or just Hawks (egoists). There must necessarily be some proportion of both. It follows that in the conditions of natural selection (competition, antagonism), compulsory strategic diversity and alternative behavior programs are required. However, none of them cannot be dominant in the absolute sense. Otherwise, the selection simply ceases to function.

4. Basic conflict of evolution and sexual selection

Until the beginning of the 1980s, the overwhelming number of evolutionary environmental were considered sexual reproduction as a harmonious union of partners interested in obtaining offspring. Indeed, strict monogamy guarantees the harmony of the sexes, because any sign that reduces the fitness of one sex reduces the fitness of the other. However, now it is increasingly acknowledged that the frequency and stability of monogamous relationships in nature have been overvalued and that due attention has not been paid to the difference in the genetic interests of the sexes. For this reason, the point of view among environmen is that sexual reproduction is in fact the same "Evolutionary arms race" of the sexes with mutual struggle and chases, *i.e*. antagonism of

behavioral strategies, as well as natural selection. Consequently, organisms in sexual reproduction are also subject to selection, as in the intraspecific and interspecies struggle for existence.

American ecology Robert Travers in 1972 proposed the already become classic concept of the parental contribution as a universal mechanism of sexual selection (Trivers 1972). The meaning of this concept cannot be overvalued, due to its explanation of how sexual conflicts should be resolved at all.

First, the concept of parental contribution explains why sexual conflicts are inevitable in principle. The fact is that females and males make different investments in the creation of offspring. Females are genetically designed to invest the main resource in the birth, care and protection of offspring. Accordingly, they are given the right to choose a partner for mating. The female is less interested in sexual intercourse with the partner as such and pays more attention to the qualities of the male as a potential father and "breadwinner" of her and future children. Males, on the contrary, are genetically destined to make a smaller contribution to the birth and upbringing of offspring. For this privilege they pay rivalry with their own kind for access to females.

Under the law of R. Fischer's sex index, both parents "want" to have sons and daughters in equal numbers. Their evolutionary "interests" at first sight should coincide, for each child contains parental genes equally. But because of the difference in the number and size of the sex cells in males and females, there is a conflict over the distribution of expenses for growing children. Every parent wants him to survive as many children as possible. The less he or she has to invest in each of her children, the more children he or she can have. But here the sex difference between parents begins to play an important role. The mother from the beginning puts in the descendant more than her father. Hence, already at the time of conception, she takes on weightier "obligations" for each offspring than father. If the child dies, the mother loses more than the father. If she tried to leave the child for the father, and she would like to go to another male, then the father could take revenge on her by abandoning the child. Therefore, in the early stages of the development of the child, the father often leaves his mother, than vice versa. In addition, females invest more in children than males, not only at the very beginning, but also throughout their development. Each female and every male "wants" to maximize their contribution to reproduction.

Thus, sexual conflict is a genetically conditioned variety of interests of male egoists and female altruists in the formation of a parental contribution to the future offspring.

The basic conflict of evolution and the "Tragedy of common resources". The American Biologist Garret Hardin, who published the article "The Tragedy of Common Resources" in 1968, immediately became one of the most cited (Hardin 1968), gave dramatic context and, perhaps, public significance to the problem of evolutionary instability of common ownership and cooperation. Complementarity of population strategies Pigeon and Hawk has, among others, one, perhaps the most important, consequence. It involves the instability of common property (common property, possession), and with it altruism and cooperation as strategic programs of behavior. The tragedy of common resources arises from the impossibility of excluding selfishness and the personal initiative associated with it. If there is a common asset, it is sooner or later ruined by the uncontrollable greed of private interest. If there is stable cooperation somewhere, it is necessarily undermined and destroyed by a more successful private initiative. If somewhere there was a unification of altruists, it must be headed by dissenters, *i.e.* Egoists. Hence, it is impossible that all the individuals of the population are egoists or altruists. Cooperation and altruism lose their selfishness due to the absence and sometimes suppression of personal initiative and entrepreneurship. Innovation is the lot of individuals, not collectives, in which the corporate spirit essentially limits the search field. But on the other hand, as is well known, without cooperation and altruism, environmental and social evolution is impossible - from unicellular organisms to multicellular organisms, and from them to social communities of animals and humans (Lumsden and Wilson 1981, Richerson and Boyd, Kropotkin 1907).

If organisms, according to R. Dawkins, are machines for the survival of genes, then after recognition of this fact for evolutionary environment, the problem of explaining the origin of altruism (cooperation) both among the genes themselves and organisms became topical. Indeed, how did the natural selection allow the emergence of a strategy called altruism, in conditions where only that which corresponds to personal interest is reasonable? The general answer is known. No strategy under conditions of natural selection can become an absolute dominant, and can only be in perpetual competition with its opposite. It follows that if there are egoists, and this is not disputed by anyone, altruists must necessarily exist. The converse is also true. The difficulty for geneticists was convincing proof of altruism as a result of the action of natural selection. To the honor of geneticists, it should be noted that they successfully coped with this task.

Conclusion

The basic conflict of evolution is the conflict of egoists and altruists at all levels of the organization of living matter. Conflict of ego-genes and altruistic genes led to sexual reproduction, selection and division of all multicellular

organisms into male and female individuals. The evolutionary conflict between egoists and altruists did not end there, but it was further developed. It was transformed into a population conflict - a conflict of selfish and altruistic strategies of behavior of all members of the population. The subjects of such a conflict are not individuals, but the entire population of the population. The price of resolving such a conflict is the stability of the existence of the entire population.

The most important result of the evolutionary theory of games can be considered the discovery of the complementarity of selfish and altruistic strategies of behavior. Coevolution, which is usually reduced to a cultural interpretation of the principles of C. Darwin's natural selection, is in fact based on a conflict between altruists and egoists. Attempts to substantiate the cause of co-evolution in so-called non-genetic factors, for example, in conformism, are methodologically unsatisfactory, since they destroy the unity of explanation.

A new evolutionary paradigm comes from the unavoidability of its main conflict and its opposites. It shows that the only purpose of resolving the basic conflict of evolution is the generation of interrelated acts of adaptation and adaptation of both individuals and populations. The subjects of the basic conflict of evolution will always have disparate interests in the co-evolutionary race. Therefore, antagonism is the only form of resolution of sexual conflict, providing both stability and development of populations.

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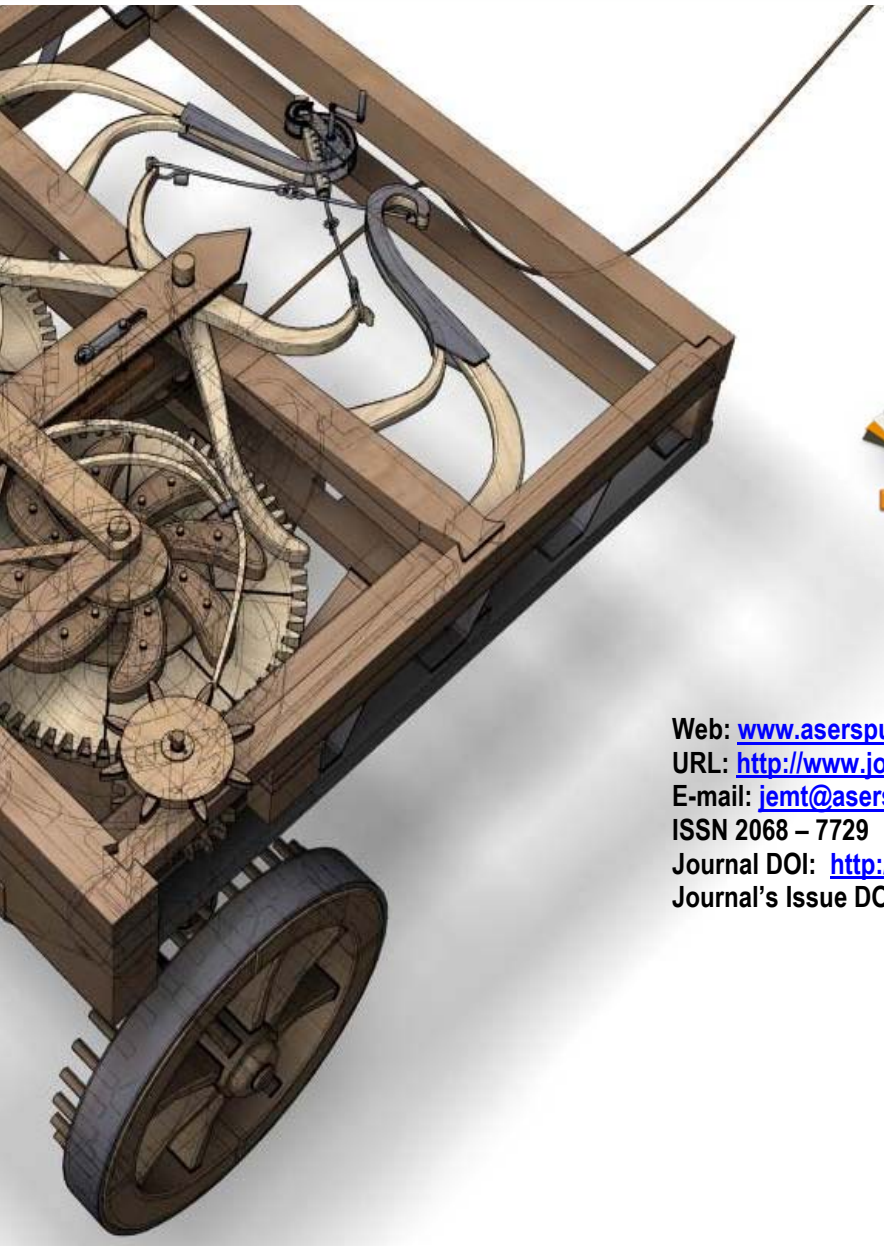

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