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INVARIANTS OF THE NONLINEAR UNIVERSE

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The monograph is a continuation of the scientific trend, named "Russian Cosmism". The fundamental bases of the Universe development, humanity life, covering an interval of 15-20 mlrd.years are investigated in this monograph. The special accent is made on the study of socio-historical processes for 7 000 years (social synergetic). It is shown that laws of synergetic are found out from the behaviour of the mechanical objects, it is impossible to spread them on alive and social systems without adjustment. There are discovered invariants for all levels of the organizations to matter laws development (synergetic), allowing to realize the forecasts. In the light of the global evolutionism the synergetic theory of the systems (STS) develops, complemented concepts of the world`s nonlinarly, multiregularity, nonstationaruty. The regularities which have been got allowed to implement the extrapolation to fundamental principles of the world. The net - model of the world substrat is constructed, it is explained the nature of the mass, energy, space, time, information. The locomotive of all evolution processes is a dinamic of substrut. In the light of synergetic presentations the notions "order", "chaos" are analysed. The whole world is introduced as hierarchy of different order levels. A superdifficult order of substrat (wrongly interpreted as chaos) in the course of evolution is transformed into more comprehensible for a man order of the modern world.

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INTRODUCTION.

Last time a public interest is marked to problems of the development. Those felt it before the others, who on sort of their activity face to the problems of the wholesness: biologists, philosophers, ecologists, sociologists. The task of the modern cognitive process is not only carrying information (the knowledge) from preceding generations to new ones, but also study of teaching technology, critical attitude to established paradigms. It is necessary to teach the creative activity and abilities of forecasting the future. Carrying the methods of one science in another creates a synergetic effect "expansions" of consciousness, develops the skill "to peek for the horizon". For full "vision" of a very big object it is necessary to change the standpoint, i.e. to move in a space. It is also necessary for a researcher, a scientist, a student to move in a space of different knowledge, miscellaneous standpoints, synthesizing multivariate picture of the world.

At the end of the 20 century it became obvious, that we must not wait for a "linear, firm development". In order not to create the antropogen crisises, a society must agree its own activity with laws of the world development. It is necessary to forecast the future crisises and take preventing measures, not to wait when "the thander rushes".

The linear forecasting has not justified itself. A postunclassical science with its new system of the paradigms became to consider the world as nonlinear, unbalanced, multiregular, and processes as inconvertible and chaos.

The trends of technocrateand humanitarian cultures integration are marked. The problem of the making the united scientific base for preparing specialists with holist Weltanshauung appeared. Such approach requires overcoming of psychological barriers, having formed as a result of disembodied teaching of separate applied discipline. Only holist education can form a noosphere personality, thinking in planetarium, global and ecumenical categories capable conciously take over a burden of the future noosphere selflimit. However such sciences as history, sociology, politology, economics, anthropology try to keep the distance from naturally - scientific discipline. For instance, a course of natural science does not at all take into account the specific of the management teaching, and economics is taught in take-off from ways of its management. The ecology points to the biosphere problems, but can not control them, and science about management is oriented only on management of man-machine system and is not interested in biosphere processes. The economic science, management, marketing are oriented on the "maximum satisfaction of consumers requests" though today obviously that facilities of the Earth are not boundless, and the number of population exceeds in several times the rates, counted by ecologists. Sooner or later the task of a reasonable consumption raises and then the new economics will appear.

It is obviously that the nessesaty of a teaching trasferming into a special metalanguage in a high education which is understandable as to a humanitarian so as to a listener of a naturally scientific cycle is formed. Mentioned above means that it is reasonale to build a modern educational process in the form of a cooperative (synergetic) interaction of many subjects.

This work partly fills lacking the "width of the incidence" of problems in the past, present and future of the mankind and can be offered as an intersubject addition to educational courses "Concepts of Modern Natural Science", "Ecology", "Sociology", "Theory of Management", "Theory of Organization", "Philosophy", "Strategic Management", "Synergetics".

The extensive material, engulfing events from the "creation" of the world up to our days (15-20 mlrd. years) are in the view of the monography. Objects of microworld, mezoworld and megaworld, alive and lifeless matter are considered. Big attention is spared on social systems synergetic. According to the tasks this monograph is a continuation of the scientific trend, which is called "Russian Cosmism", in the base of which N.F. Fedorov, A.V. Suhovo-Kobylin, N.A. Umov, K.E. Ciolkovskiy, V. I. Vernadskiy, A.L. Chizhevskiy, N.N. Moiseev and others stood.

Roots of the study are in the ancient Greec philosophy with its searching of the world fundamental basis (chapter 1). For 2 000 years enormous amount of nonsytematic empirical knowledge is prodused by the mankind, which, as a spilt book, contains all information about the content of the novel, but it is impossible to read it.

This monograph realizes an attempt to collect the whole plot from disembodied presentation i.e. on the background of the accidents to see the invariants of the development. The knowledge of invariants will give the mankind a possibility to shorten the expenseses on predictor-corrector method and realize an aimed-ruled choice of the further development.

The first 4 chapters are formed from fundamental generalizations (the general theory of systems, the theory of control and selforganization, synergetics). On the ground of generalizations invariants of the Universe development are made (chapters 5 - 7). The maximum generalization opens the possibility for deduction, allows to reveal scientific "myths" and call in question dogmas. The combination of the General theoriy of the systems and synergetics worldoutlook has allowed to open the new page in the theory of systems (synergetic theory of systems develops).

The bibliography contains 244 sources, spectrum of which covers phylosophy, physics, chemistry, biology, genetics, ecology, history, economics, theory of control, ethology, etnology, psychology, theory of evolutions, theory of creative activity and others. In the conclusion on the base of the invariant laws generalised forecasts of the mankind, biosphere, reason development prospects are made.

1.1. GNOSEOLOGY OF THE PROBLEM "

"It is not enough to adore the wealth and change of the nature phenomenas, it is necessary to move forward to more exact understanding of the internal harmony and regularities of the nature". This thought of Gegel has formulated the purpose of the science forward on the centuries. The purpose of a science must not disperse for the reason of the human existence. So it is important to realize the purpose of the mankind, coming from a modern knowledge of the logic of the development. Is this possible? Gnoseology concerns such sort of problems.

Gnoseology - a theory about limits and ways of the cognition. Gnoseology confirms that we study not external world, but only its reflection in the consciousness. It is typical for it joining the scientific picture of the world and faiths, logical and surd principles. Neokantians consider the rational reason is not the single way of the world cognition (for instance, there is a subconsiousness, sensations, a faith, a mythological consciousness).

The longing to explain everything is an innate installing of the person behaviour. Lack of understanding, unexplained causes the alert not only in a person, but also in an animal. The explanation calms, that is why the need for creation a myth, theories, hypothesises, suggestions exists.

The mankind experience since time of the homo sapiens appearance has shown that it is impossible to get to know the World up to the end. The more we learn, the more the horizons of the unknown open (Platon). Constantly to change of ancient myth empirical installed "reliable" facts come, but horizons of unknown enlarge and the modern science continues be renewed with new myths (not confirmed by hypothesis). It is possible to read about modern myths of science in section 1.4.

Agnostic Kant confirmed that the world is incognizable, but it is possible to agree with it only with reservation. Talking about exhausting,

absolute knowledge, Kant was right. But if to take into account knowledge, which allow to survive, develop, build, create technosphere, prevent catastrophes and others, Kant was not right. We can get to know the World partly within the framework of the mankind necessities satisfaction and needs.

The subjectivism long time was exiled from a classical science. The scientific constructions managed without a presence of a watcher. But a postclassical science returned to the need of analysing the particularities of subjective interpretation of experiments.

Dialectical materialism takes the statement as an acsiom that the world is infinitely different, is not created, can't be destroyed and unlimited in the space and time. If take a given statement as a source parcel, that we shall come to incognizable of the world not only by one person, but also by all mankind. If the world is endless, but rate of the cognition is limited, so it is impossible to get to know the endless.

Positivism has declared incognizable of the world fundamental priciples by methods of a science because these ideas are not proved empiricaly, has left these quest to the faith, the religion and the philosophy.

Philosophy is founded on a faith in united, the general beginning. If mathematicians remove their aksioms from empiric, philosophers do it from faith, analogy, contemplation of the world (it is possible to read about faith in section 1.4).

The intuition created the belief of ancient people that things exist regardless of them. Materialists has assumed this belief as a basis of the cognition theory, as a postulate. It is possible to consider that in the subconscious logic of the being development is "wired". The modern science not without base-thread pertains with big respect to methods of the intuitive cognition, becouse "the truth is toled by the infant's mouth". Methods of the intuitive cognition present rudimentary empiric of subconscious. (It is possible to read in details about the intuitive cognition in section 1.3 in chapter 7).

Usually, the first step of the cognition consists in observation. Each child begins with it. Ancient philosophers also were contemplators. However it does not follow to think that they dispensed only "pure" reason. Empiric surrounded them in the manner of nature phenomenas, results of people's activity. The experience of the nature came into their body, into their subconscious, intuition. Astronomers also could not influence upon

"harmony of the celestial spheres", but from pure observations and discourses they built the images of the Universe construction. Geologists, paleontologists, historians, sociologists, archeologists build their sciences from observations for experience of the nature and socium. It is impossible to repeat past events, but the building of the science is being made yet. An experimentator is the nature, but human consciousness unites its experience in science. Marks toled that science "at first creates the roof, and then leads foundation under it". It is possible to add that the nature acts in the inverse order.

Aside from the contemplation the science existed (the experience, knowledge), built on handmade emperic. The skill to make the ferrules for darts from stones - already is a science, sent from generation to generation. Let a modern philosopher, a man of letters, a historian make a stone knife without an experienced instructor. Even animals train the skill of the hunt their kids. A science - always a generalization of the experience, but generalizations may be of the different level (for instance, the law of the worldwide gravity and experience of the processing stone). That is why delimitation of the science and technology is rather conditional. The existence of the general laws, controlling, both cosmos, and soul, for ancient philosophers was considered natural.

On the enough high level of the science development the transition from a simple observation to a laboratory experiment (Galiley, Newton) has occured. The explanation of experimental data is conducted by means of different hypothesises. Past check and proved on experience hypothesis becomes a scientific theory. Any new theory must have its former theory (the principle of the correspondence by Bor). The scientific theory presents a system of the main ideas, generalising experienced data and reflecting objective regularities of the nature on the exact level of the human knowledge.

Some time later new observations begin to disagree with "old" theories and force to revise the whole collection of facts from the other point of view. More perfect theories appear, which in some time will also be replaced.

Everybody understands that the knowledge fullness depends upon the quality of investigation instruments. Levenguc by means of microscope has opened the world of microscopic creatures in a drop of the water. The telescope let to learn much new about cosmos. The philosophical categories and notions also are "instruments" of a human thinking and from their fullnesses and "quality" the depth of penetration in essence of the things depends.

The consciousness is an instrument of the cognition. Information coming from encirrclement is fixed in the consciousness. The consciousness possesses the ability to create from fragments the whole picture. However the created images are not always identical to reality. For instance, a thousand of the years the man was sure that the Sun "went" around the Earth, and only in the 17 century this standpoint hardly had been changed with big unwillingness. Now it is considered that the Earth moves around the Sun on the elleptical orbit. It is possible to show plenty of such examples. The most important examples will critically be considered later.

Hardly anybody will confirm that consciousness is an omnipotent instrument, possessing boundless possibilities. The consciousness is not capable to perceive more then 3 D images, can not conduct simultaneously more then one thinking action (for instance, it is impossible simultaneously to solve the task on physics and write the poetry). The brain can not remember the endless amount facts though there are some people with enormous (but not boundless) memory. Infinitely big and infinitely small, unchangeable, eternal, order, chaos, space, time do not have a corresponding image in the consciousness.

However a good master with a bad instrument works better, than ignoramus. For instance, astronom Ryomer calculated the velocity of the light, staking out satellites of the Jupiter, having in his disposial only a telescope. The difficult problems dared on computers of the first generation by means of master programming. And a scientist can intensify the possibility of his brain, using logic, system analysis and etc.

History of mankind is accompanied by the progress of the cognitive process. Undeveloped peoples (for instance, aboriginals of Australia) possessed paralogical thinking, did not separate themselves from animals and plants. Philosophers of Ancient Greece already were not satisfied with beliefs about the world. Aristotel (384-322 BC) created the logic, being the first scientific (but not ideal) algorithm of prooving statements. Mathematics (Middle and East Asia, pifagoreitors) made a new description language of the quantitative world branch and formalized the thinking. Logic is a foundation of mathematics.

With the development of the science thinking ways improved, mathematical logics, dialectical logic, inductive and deductive methods,

system analysis and others appeared. **A man learned to intensify the technical facility not only his motor, but also thinking device**. Systems of the artificial intellect have been making, expert systems are used, electronic database, methods of collective generation of the decisions (the brain storm). The algorithm of the invention problems decision was designed In the USSR [12]. All this in the whole leads to the speeding up of scientific and technical progress, expansion of the knowledge horizon. Science influences upon worldoutlook, on philosophy (the dynamic of the science will be considered in chapter 6).

Intellectual instruments of the science are paradigms. In each epoch a science has its own set of paradigms. A paradigm is a special instrument, a guidebook of the cognition, as an open "window", orientating glance to the necessary side. A paradigm forces scientists to communicate on alike language and have alike "look" on the world.

It is followed to emphasize that a paradigm relieves the perception of one sides of reality, but obstructs the perception of others. The error begins there where some conclusion, theory, standpoint is added universal importance, where the relative is taken as absolutive. A paradigm tends to turn into dogma.

Holizm - a perception of the World through ensemble of the paradigms (pluralism glance), as through ensemble of the windows, opened in different sides. Holizm requires the skills to synthesize the unadulterated image from fragments of different knowledge. **Modern postneoclassical stage of the scientific thought development is characterized by the formation of a new worldoutlook paradigm:on the change of the idea of the oppositions fight the integrative concepts and principles of muture additions come, and on change of Aristotel logic - systems of ambiguous and odd number-cue logics.**

In the present study we shall come from the following installation:

• There are plenty of accustomed, rack of the errors, myths in a science.

• A quoting from the works of ancient philosophers and classicists is not a proof, but only a standpoint.

• A real picture of the world forms from ensemble of the miscellaneous standpoints.

• It is not right to spread an empirical experience on a too broad circle of phenomenas without adjustments and adjustments.

• Paradigms of the science have limited using.

• The presence and opinion of the subject effect on any results of experience. Objective and subjective outlook presents the united complex.

• It should to study any phenomena in dinamic.

So, what knowledge is? Knowledge - a reflected aproximate image of reality in consciousness on a certain concrete moment of time. Let us name the aproximate image of reality a modl. The philosophical notions "ideal", "reflected in consciousness" are possible to change by a synonym - a model. As objects of the science emerge not the phenomenas of the real world themselves, but their analogues - models (the ideal reflection to reality).

A model can be fantastic or identical to reality. In a leninist theory of cognition a reflection of reality in consciousness is possible to consider as a modeling. The consciousness does not simply approximately reflects the reality, it models the reality, builds the image depending on intellect and mentalitet, from the preceding experience, from an intuition of an individ. So it should always to remember about an influence of the subject on the "purity of the experiment" and the "true" of conclusions. The models of objective reality, appeared in the consciousness of genious, a normal person, an idiot can differ very much.

The more an object is complicated, the more amount of the models (the images) are required for its reflections. For instance to visualize what the complex three-dementional figure looks, it is necessary to consider it with different sides (more often it is enough with three ones). The maps may be political, physical, climatic, economic, ethnic etc. The collection of the maps increases the information about an object, but does not exhaust it completely.

The evolution of the scientific knowledge presents in itself an evolution of ideal images. For instance, Aristotel presented the Earth in the form of a ball in the centre of the World. Galiley "saw" it in the form of a ball, moving around the Sun. Greeks Levkipp and Demokrit BC "created" atoms - not-done particles, forming "foundation" of World. Later nearly 2000 years Rezerford and Bor expressed "atom" (the chemical element) in

the manner of complex system with kernel and electrons. Classical mechanics Newton was transformed in reltyativistic mechanic of Einstein and etc.

Rezuming stated, it is possible to say that a picture of the world is formed from the collection of model presentations bounded with each other.The development of the science constantly complicates the models, enlarges their amount, increases the borders of applicability, but the whole picture is unattainable, as a horizon. The understanding of the polyhedral picture of the world becomes the accessable only for a limited circle of persons. For this it is not enough to have an encyclopedic knowledge, it is necessary else to know how to synthesize holistic image from them.

The construction of the world's picture by means of association quotient models is called an induction. The induction - an initial stage of the cognition (the syntheses). When enough much empirical material marketed in generalization is accumulated, time of deduction and indicating of invariants approaches. The knowledge of the general rules, laws, principle allows conjecture, guess, forecast, come out of the empirical knowledge. Exactly in a such way ancient filosophers prototyped the foundation, the world substrat. The model of an expanding Universe, the model of the inevitable apocalypse (all have a beginning and the end), the model of an evolutions from a monkey into a person were born this way. Some deductive considerations may be checked, but many will turn out to be the hypothesis forever.

In 19-20 centuries a lot of "narrow" professional (the more early scientists and philosophers were encyclopedists), studying fragments of the world, have accumulated the big empirical material. For the association of ensemble disembodied fragments into the united system of knowlege specialists of the special kind were needed, architects of a special sort, possessing posessing intersubject knowlege. Generalizations allow keep portably and send the knowledge. Regrettably, under generalizations the technology of their proof is lost and together with it suggestions, doubts, not-accuracy are lost too, and this transforms some knowledges in dogmas. The large generalizations by public are often perceived by a narrow margin. Let us consider the reasons of it.

Let someone is creating the model of the World. He collects the facts, finding by different scientists, and from these facts, he tries "to pack" the worldoutlook. He creates the world in his imagination. The facts are drived, collects into image. As a resalt a principal new model appeares, not having analogue, which for the first time the creator sees, not to speak about all the rest. The absence of analogues is perceived by a society as a delirium ("it can not be!"). Hereinafter, in the course of the models' study, its "correctness" is discovered, the acknowledgements appear and an opinion changes ("something rational is in it"). And hereinafter this generalised model falls into reference books and becomes a dogma.

A person in his cognitive activity handles only models. Models in a consious often are taken as an objective reality. Such defect is natural for all people. Under psychic frustration this phenomena reveals in the manner of hallucinations. In less dangerous forms identification of mental images with reality (the hallucination) is in art, and in science, and in religion. People outlive the the theatrical action sometimes more brightly, than the reality. The science, "gaining" truth, must learn to separate mifological images from the real knowledge.

The models, pretending on "truth", must prove their capacity to work, showing prognostic abilities. If incredible model predicts events (the deduction), and predictions notwithstanding sceptic come true, that is a sign of a working model (identical to objective reality). For instance, classical mechanics of Newton has predicted the existence of two earlier unknown planets (the Neptune and the Pluto). Relyativistic mechanics of Einstein has predicted variability of time moving, twisting of the light ray and others. The system of chemical elements by D. I. Mendeleev has predicted the characteristic of unknown chemical elements. If predictions have not come true, that model changes into myth.

Regrettably, there are models, which are impossible to check (the model of the Big Blast, the model of the Universe pulsation and others.). Many religions (the models) did an attempt to explain the appearanse of the whole putting. But it is also impossible to check them. That is why religious relicts became numbed in their protoplastic, changed into dogmas.

Conclusion:

1. The error begins there where what the universal importance is given to some conclusion, theory, standpoint, where relative is taken as absolute.

2. The modern postneoclassical stage of the scientific thought development is characterized by figure-pouring of a new world outlook

paradigm. To the change of the oppositions fights ideas the integrative concepts and principles of the mutual addition (holizm) come.

3. Holizm (the syntheses) is impossible without reductionizm. Reductionizm and holizm - the united set of a science.

4. The presence and opinion of the subject affects on results of any experience. Objective and subjective present in itself is a united complex.

5. Any phenomena should be studied in its movement.

6. The Object of the science emerge not phenomenas of the real world themselves, but their analogues - models (the ideal reflections of reality).

7. The more complicated an object is, the greater amount of the models (the image) is required for its reflection.

1.2. The Modern paradigm of the World wholeness.

Modern paradigm of the World wholeness confirms that the whole World is interconnected. But an unclear question remains in this paradigm what is considered the relationship. Can be interconnected objects, residing on endless distance? Is the given paradigm new? To answer this question, let us make an excursion to the history of science.

The primitive people, either as animals, did not separate themselves from the surrounding world, considering that they have derived from animals, plants. The ancient Greek philosophers also did not dismember the world, watching it wholly. In this instance philosophy, either as any other science, using an image only of a foreseeable world, tries to spread it on infinity. Existence of the general laws, controlling, both the cosmos, and a soul, for thinkers of that time was considered natural. The sensation of the unity, universe of the world originalities pushed them on the quest of fundamental principle, from which all putting appeared [217, 19]. This work pursues the similar purposes.

For instance, miletzi (Ion's school in ancient Greece) considered that the whole world proceeds from a certain united original. In this original all deposits are "convoluted" required for forming the voluptuous World which in the course of conversions material, one thing into another something must remain unchangeable. This unchangeable they presented in the manner of some material, which, remaining itself, gains the type of the different things by turns. In the the quolity of analogue it is possible to present the bricks, from which it is possible to make many different houses. Or a constructor for children, from details of which it is possible to collect the ensemble of the miscellaneous devices.

In 6-5 centuries BC ionitzi (Fales, Anaksimandr, Anaksimen, Laerciy) confermed that for variety voluptuous perception, in the base of whole putting the united substation is.

Fales Miletskiy (625-547 years BC) visualized the "general" in the manner of water. Anaksimen - in the manner of air. Fales and Anaksimen came from the known by them substances (water, air), not expecting that last themselves are component objects.

Anaksimandr (610-546 years BC) "thought" an apeiron (the endless), something divine, immortal, eternal. In an apeiron nothing does not appear newly, everything is already in it. All that stands out from it, then inevitably returns back. Anaksimandr presented the Universe as a huge animal, organism. It is necessary to note that Anaksimandr unlike Fales created a transtzedental model of the originality, to which there was not an analogue among scientific knowledge of that time (on terminology by N. Bor "a mad idea"). You should not think that Anaksimandr managed to think something, not having analogue in the nature. For exsample, scientist opened the molecule DNK - an analogue of apeiron (the originality of the whole alive). The molecule DNK contains in a "convolute" type the whole information and potention of the future development of organism. The molecule DNK does not die together with an organism (eternal) because it is sent on inheritance to scions. The modern physics went further then miletzi, having shown that neighber water nor air, but vertual structures of the vacuum can pretend on initial material.

The fact of the world development has arranged in the concept of the global evoluzionism. Sinergetic tries to understand the laws of the world selforganisation, but up to our time it remains unclear, where the laws themselves come from, and in what substances the program of the World selfdevelopment is "convoluted". It is likely that in this question a modern science for 2500 years has not far gone from miletzs. And that's why the paradigm of the World wholeness is "well forgotten old".

Geraklit (530-470 years BC) realized that it is impossible to separate the identity and difference, the general and the separate (such contrapositions exist only in the consciousness). The verge of the pyramid can not exist without a pyramid. Only thinking can select the verge as the separate from a pyramid. The pat of palms can not be realized without

palms. If an object is a process, for instance a curl then everything in it comes to each other and is bound by a motion. Objects are always bound by processes.

If miletzs concentrated attention on an initial substanse, **so Geraklit accented attention on the unity of the processes. In his opinion, absolute are not structures, but processes (a motion)**. The Universe is not a condition, but a formation. "All flows, all changes". Geraklit gives the image a river, in which it is impossible to enter twice, and pays attention to unity of the oppositions (unchanging of the river and its fluidity). In 1912 year A. Bogdanov in "Tektology" continued to develop the given thought in an image of the stationary waterfall [20].

Philosophy of Geraklit is considered as the forerunner of Gegel and Marks dialectic, which was taken from Geraklit teaching about development through contradictions. In dialectical materialism the notion "quietness" is rejected and the stress is made on the development through the fight of oppositions. That is considered stationary, unchangeable, practically is a very slow, imperceptible motion.

An absolute is a relationship of all things by Geraklit. He acknowledged the being as absolute, but rejected the absolute nonexistence (the emptiness of Pifagoreyces). In his presentation the World has not neither the beginning, nor the end. A motion - a transition of one into another (today the selfmovement of the matter is determened not simply as a mutual transition, but as an evolution).

However modern knowledge of an evolution show not free conversions of the things, but directivity of the conversions. Endless directed complication for our consciousness (the good sense) is absurd, so it remains to expect, that the stage of the disinteration, destruction must follow by the complication, and so on reiterative endless cycle.

At present it is known a model of the pulsing Universe [238]. But eternal, unchangeable pulsation is a quotient event of the Universe stationary (the stationary pulsation). The vicious circle an absurdity appears. Obviously, human thought fights, as a bird in a cage, and can not be beyond the scope of its logic (for limits of its good sense).

Pifagor (570-500 years BC) and pifagoreits considered the World from positions of the limit abstraction - mathematics. Unlike miletzs they realized the need of the discrete structure of a substance, spliting it into alike units - elements. "The essence of the things is the unfeeling number ".

"The organization of the Universe presents a harmony of numbers and relations by itself" [46]. Pifagoreits for the first time presented the notion of "emptinesses" between non-dimensional points, and considered, that ensemble of fundamental principles can coexist beside. In the base of the whole putting the quietness and separate of the things are, but not their motion and relationship.

It is possible to say that pifagoreits prototyped the world on a language of the "still" mathematics of their time. The endless variety of things is reduced by mathematics to the number (one elephant and one mouse). Mathematics reveals the quantitative sides of the world and general rules of their construction. And in our time it is possible to say a great deal about the World by formulas (physical and chemical laws, laws of organizations propotions, gilded section etc.).

In 16-17 centuries mathematics, following logic of the cognition, became dialectical. Differential, integral calculus, mathematical analysis appeared (Dekart, Leybnic, Newton, Eyler). Dekart (1596 - 1650 years) and Leybnic (1646 - 1716 years) reasoned about logic as about the "general mathematics". They dreamed about the creation of the "universal language", systems of terms, allowing purely formal logical operations [47].

E.Kant (1750 year) has revealled all invariants, which for a thousand of the years were voiced about the thinking, and understood that all of them were voiced by Aristotel yet. According to Kant logic - a science of a certain statement evidence with the using of the formal thinking rules.Sophists used the logic as facility proof of already existing argument, because its rules are: it is possible to stand the logical justification for any nonsense. "Foolishness can liberally pass through the general logic filter". Kant considered that the logic must be created, which be suitable for a priori-syntetic judgements, and has named it a transzedental logic, a logic of the truth [89].

From the logic by Aristotel has grown the logic by Gegel (the teaching about the general forms of the development of the whole existing). Spinoza interpreted the logic as a way of impressing of the general order and relationship of the things. "Thinking is realized in a much limited form. **But the thinking of a person is faithfull if it will be coordinated with laws of the nature development" [197].**

As it is seen, ideas of pifagoreits were not left aside. And in our time the attempts to get to know the algorithms of the development, evolution, to describe the world by systems of bound functions are taken. The new science develops from empirical observations about selfdevelopent - synergetic [100]. This book is dedicated to searching for invariant laws of the development.

As it is seen, pifagoreits has done the large step in the cognition of the World. The teaching of pifagoreits does not withstand the glance of other philosophers, but complements them. Above we already spoke about the nesessity of the description of complex objects by means of ensemble of different models. But it should remember that in base of mathematics, either as logic, abstracted "good sense" lies. **The formal rules of mathematics, following which it is managed to open something new, can not remove out of limits of that "axioms", which prescribed in its base** (the example can be the logic by Aristotel). If it is taken invalid parcel, that it is possible to "prove" logicaly any rubbish. If to enter the false data in a computer then on strict algorithm it will be received a false answer. Mathematics is a fine instrument of studies, but in border of permited.

6-5 centuries B.C. Eleats (Ksenofant. Zenon, Meliss, Parmenid). From the standpoint of modern presentations eleats have made the step aside from the paradigm of wholeness. They separaed the world into voluptuous (not the true world) and being (the abstraction). Upon their opinion, the clear being is inconceivable and unspeakable. They identified the being with the material mass, and nonexistence with the emptness, denied the interaction between resting body (only moving subjects interact). For instance, Zenon from Elei (490-430 years B.C.) did not deny motion, which is perceived by feelings, but considered it not true (the illusion). They also, as milets and pifagoreits found general which unites all subjects.

Eleats realized inconsistency of the absolute rest with the variety of the world that is why in order to combine incompatible, they had to think entelechia (a moving divine power). From the standpoint of a modern "good sense" entelechia is not a little worse then a statement that "the motion always was", it is eternal, as the matter was (dialectical materialism). Neither that, nor other is impossible to understand by a good sense.

Many questions, put by eleats, are not solved today yet. What is a mass? (eleats considered it the true being). Where was it appeared from, and how did the motion appear? Usually they answer that the motion was always, but the mass - an attribute of matter. But the matter has other attributes (for instance, charge, about which eleats did not know).

Nearly thousand years later after eleats the mankind continued to solve the same "cursed" problems. For instance, Dekart considered that thing and thought about it are absolutely different (today we correlate this as an object and a model). He separated material and spiritual substances. "All mutating of the matter hang from the motion", and the motion derives from the god (the analogue of entelechia) [46]. Newton had separated the matter, the mass, the space, the time, the energy, considering them independent from each other (going from a paradigm of the wholeness).

5-4 centuries B.C. atomists (Levkipp, Empedokl, Demokrit) developed the idea of the world discrete. Anaksimen Miletskiy has brought forth the idea of the arising the voluptuous things by the thickening and the rarelity of a substrat (the air). Only discrete particles can thicken, because nothing can thicken in utter ambienc. Thereby, Anaksimen was intuitive atomist and guessed the discrete of substrat. Atomists Greeks have brought his idea upto extremity. The maximum thickening is atoms, and rarelity - the emptiness. Atoms, according their opinion, eternal, unchangeable, simple, indivisible. They explained the development as a mechanical join, combinatorics of atoms. Later Roman Lukreciy (99-51 years B.C.) has added a variety to atoms.

Atomistic picture looked as follows. For a disorderly motion of the emptiness is needed. Atoms possess forms and sizes (it was confirmed). The reason of the motion is unknown, but it is given from the very beginning (the reason is unknown now too). The velocity of the moving of the molecules and atoms is final (it is measured and calculated by modern physicist). Atoms form the curls, concourses, which involve in their moving the mass of nearby atoms, the world appear (the hierarchy of the structures and processes).

Atomists did not explain the nature of atoms and emptinesses, but took them as fundamental orinciples. Exactly axioms of geometry are not explained, but are taken as a fact. Curiously enough that endless imaginative fission of the particles material atomists has considered as an absurd and stopped on the atom, but mathematics afford themselves to handle infinitely small value. A point differs from an atom by the absence of the size. The Ancient philosophers were upset with beliefs about infinitely small values, but dialectical materialism without embarrassment handles the endless Universe on time and in space.

Demokrit (460-370 years B.C.), but later his follower Dekart (1596-1650 years) proclamed the alliance of philsophy and science. Speculating

about an origin of celestial objects, Dekart draws the following picture: "God has installed these laws so miraculously (the laws of the nature) that even though expect that he created nothing, except said and did not put into matter of any order and any propotions, but, on the contrary, has left only the most tangled and unconceived chaos, what only the poets can describe, so in such event of these laws it was enough the particles of the chaos came untangled themselves and were situated in such beautiful order that they image form the more perfect world". As we see, according to Dekart, from the tangled and unconceived chaos spontaneous, by their own power the fine cosmos will be born [101].

The Ideas of the world unity were developed by Leybnic. His monad is a holistic "unit" of being, it carries in itself all-out characteristic of the world as a whole. "Any monad is an alive mirror, which possess an internal action, reproducing universuum from its standpoint, and is ordered as universuum itself". Each monad - a "small world", a "compressing Universe". And an observed variety of the world introduces as a hierarchy of monads. Curiously enough that belief about a fetus of the person in the manner of homunculus (a very small man, which afterwards has grown) is assonant to presentations of Leybnic about monad. It is Important presentation of Leybnic and about the general consensus, harmonies of all parts (the element) of the world, all monads. Monads of Leybnic are analogues of apeirons.

Nicshe builds, on the essences of the deal, a certain philosophy of chaos, as a creative beginning. It is interesting that in myths of Ancient Greece and in teachings of antique sages chaos is taken into account not simply as faceless abyss, formless beginning of all worldly creations, but as universal creative principle, potentially, in convolute type containing all sample (the forms) of the formation in itself. "Antique thought in general, notes A. F. Losev, moved toward that molded, which possible was attracted for feature of the chaos as principle of the formation. Started to notice that in the chaos a sort of the oppositions unity is kept. The chaos reveals everything and unfolds everything, lets the whole to leave outward; but at the same time it absorbs everything, evels everything, hides everything inside. Ovidiy has the image of the chaos in the manner of bifacial Yanus, emerging as a creative beginning. Yanus opens and closes everything with his own hand, being as the world door. He can unfold the world in the whole its beauty and can betray its destruction" [101].

And now a science contributes the corrections in presentations of philosophers – atomists, though physicists had not get to the foundation of

the world yet. In modern outlooks atoms are not separated from each other by the emptiness, but "are shipped" in a physical vacuum. Atoms are united with each other through the matter of vacuum, as trees through the ground and roots are bound with each other.

Atomists gave a powerful push to understanding the structure of the world, but overrun the good sense (either as all the rest) were not been able. It is possible to ask a question: "From what do the atoms consist, have they internal spottinesses?" (it is known that the border always differs by characteristics from the centre). The indivisibility is not identical to homogeneity. It is possible to visualize a heterogeneous object, but indivisible by that facilities, which are in the nature (to enter the quantum prohibition on divisibility).

It is possible to expect that a certain greatambience exists, from which all the rest observed and under study ambiences have grown. **Then all ambiences, with which we have a deal in a life and I a scientific experiment, appear as some fluctuations (the indignations) of the united greatambience.** That is why all visible ambiences turn out to be bound through the greatambience with each other. It is thought that unity of the world ambiences, systems and their elements, proceeds from the unity of their apearance. It is possible to interprete kogerentnost of the natural World not as an interaction of the whole with everything and independence from the whole, but sooner just as a relatedness through the united begin in the greatambience [101].

It is possible to meet presentations about unity of the world and initials in the presentations in the East Philosophy [101]. The modern science goes from the study of the Universe evolution laws to a person and the socium, but hinduses have elected the opposite way. Shri Aurobindo wrote: "Dayanana confirms that in Veda hymns it is possible to find the truths of the modern naturally-scientific knowledge. I should like to add that, in my belief, Vedas contain in themselves, besides, row of such truths, which the modern science does not possess yet".

It is possible to agree that an idea of the unity and the consensus of the world is kept in Vedas, the idea of all-penetrating relationship of the whole with everything. According to buddhist's, daosist's, sionist's outlooks, every tiny small part of the Universe – is a special world, animated by its own life and in by the life universuum at the same time. Every part in some sense is identical, equivalent to others, small and big fragment of the Univrse. Each particle carries in itself a spark of the Ecumenical spirit participial to the

total faceless cosmos. On philosophical language this universal characteristic is expressed as a characteristic of the world elements monadnost by Leybnic. Of course it is impossible to understand rectilinear and simply the East idea about the united global relationship of the whole with everything, about full penetrating kogerentnost of the world elements. For a scientist a metaphoric sense to this idea is interesting [101].

It is interesting to conduct the collation of the notion apeiron by Anaksimandr with the presentation of "nonexistence" in Japanese worldoutlook. The nonexistence - not opened, not has become the being yet, as it were "before being". The nonexistence – a grain of a life, is not a tree yet, is not a fruit yet, but already containing in itself a potention of a tree, a potention of a fruit. The correct translation of the notion "nonexistence" in the Japanese tradition, "mukeibuzu" literally means "**a thing, not having a form", is indicative that "everything is in the not revealled form. The nonexistence is "where everything grow from as from the Universe grain"** [101].

According to more late versions of the buddhism, any existence with nessessity is mental. That is why a greatambience of universuum, essentially, is identified with a potential infinitely rich and unfowled condition. "The whole Universe, real world is presented consisting of endless ensemble of possible idea, which are found as they were in "sleepping" condition, in the treasure house of the consciousness"[101].

The whole hindu thought in its essence is found on the theory of cycles. Propulsion is introduced in the manner of a consequent row of the waves. Each wave rises and falls again; for each wave the other follows, which rises and falls off too" [101]. In this monograph (the chapter 5.4) this invariant is formulated as "A law of the life cycle".

The East symbol jan-in K. Yung interprets as follows. "Wise Chineese would said: "When "jan" reaches the most great power, the darkenning power "in" has being born in its depth, because a night begins at noon, when "jan" weakens and begins to change into "in" [101].

In the East it is allowed a possibility of untraditional ways of the cognition. The idea about cognitive and practical ways from complex to siple, from high to low develops. It is possible to understand the bases of the Universe through a man and depths of his consciousness. It is possible to learn the soul of the World through a human soul.

In the east culture true is not separated from morality. The moral perfection is a base of the truth understanding. The person intensifies his own cognitive abilities not by means of creation "artificial eyes", "artificial hands" and etc., but tranceforming himself in a special condition of the person-instrument, person-feeling of the whole Universe. Such manner of acting reveals amazing, from the standpoint of the West, poteties of a man. (the thought about innate instrument of the cognition is developed in chapter 7).

The quest of fundamental principles lasts in our time. The science installed that material in the Universe really consists of particles. But an idea of the atom, as the main element of the world-building, had suffered a radical change at the beginning of the 20 century. In 1911 Rezerford had proved that an "indivisible" atom in a kernel contains the positive charge, and electrons "revolve" around the kernel. They started to guess that the protron, the neutron and the electron really are primary material "bricks" of the Universe, searching of which scientist had been concerned from the times of Demokrit. In 1964 Helium - Mann and regardless of him Cveyg had brought forth the hypothesis, according to which protrons and neutrons are built from three particles, named kwarks [73]. Is a kwark indivisible (the atom), or is it only the next pretender on the atom?

The notion of the elementary electron also evolutions. This particle are prefixed characteristic of the particle and an electromagnetic wave. The electron - not a simple particle with a charge, gathered in a point, but a complex object portioned in space. The penetration in a secret of the electron construction lasts.

Scientists condact searching of of the prime cause and fundamental principles of nature phenomenas in all rather independent fundamental sections of Nature Study. The idea of quantums turned out to be very seminal in quest of fundamental principles. M. Plank "had computed" the quantum of time (10^{43} cer.) and the quantum of space (10^{33} cM) [170]. Hitherto is not clear, are quantums space tru atoms (indivisible) and where did they come from? It is possible can be only a subjective model. For instance, Demiyanov V.V. considers that outside the elementary quantum of material there is no space. Space and time themselves appear in consequence of elementary quantum evolution [65].

So, 5 ages B.C. contemplators, philosophers prototyped in their consciousness systems of interconnected, moving substances, from which all voluptuous objects appeared. Many presentations turned out to be

prognostic (consequently, these models are working). The main ideas had been voiced B.C. jet. For the following 2000 years science empirically opened the facts, elaborating and explicating general models of ancient philosophers. In chapter 4.3 we prototype the world substratum, united in itself ideas of ancient philosophers and modern physicis.

Needs of practice have brought about disinteration of the holistic picture of the world into fragments. Specialists from different areas ceased to understand each other. This period is started to name classical, reductionistic. "A trouble of the narrow professional is concluded not only in a strict limit of thinking by frames of a given science subject, but in his inability to see limits of hisown sciense competencies connected with this insufficiency "[87].

A professional to a narrow directivity, on determination, must much carefully study some part of the complex object. Expenseses of time for care do not give the possibility to study other sides of the object, so often professional "does not see the wood behind the trees". Professionals from different spheres of the science together are capable to cover by their attention the most part of an object, but someone must pack the united picture from fragments (a model). The scientist, who has undertook the task to unite the disembodied opinions, facts, events, laws has not a physical possibility to be on a level of narrow professionals in special knowledge, so he has to be limited surrface, but extensive information.

Now we shall peer into "The Great Encyclopedia of Kirill and Mefodiy". Diletantism - studiing science without a special preparation, under surface acquaintance with a subject. Often, the dilettante is called a person from an adjacent science, who has accidentally peeked to "a neighbour", saw something familiar there and cryed "eureka". Very often "unexpected" decisions are born on butting of the sciences and disciplines.

The scientific approach named holism, pursues the purpose "to see the wood behind the trees", anticipate the World, as the united integer. Holist must be a neighborly scientist and in some separate area, but he has to remain the dilettante in others. The scientists – esyclopedists are very little. That is why diletantism and professionalism, mutually complementing each other, let to study the world.

Epoch of encyclopedists was terminated in middle ages. The development of the science has required special knowledge, appearance of narrow professionals and, as an effect, disinteration of the knowledge on fragments. The line of the reductionism was realized in longing to simplify the reality, to distinguish, to tear away the object of the observation from the general picture (the analysis). The Classical stage was based on a principle of the hard determinism, considering that the whole world is bound, as clockwork (for example, mechanics of Newton). But this does not signify that holistic worldoutlook disappeared from the arsenal of a science, it has simply yielded the lesdership to return again in the 20th century. It is possible to give examples of encyclopedic thinking scientists from 13 up to 20 centuries. Becon, Leonardo da Vinchi, Galiley, Eyler, Dekart, Darvin, Linney, Lomonosov, Vernadskiy, Bogdanov, Bertalanfi, Maksvell, Einstein and others were among them. They opened the general laws of preservation, designed the theory of systems (Bogdanov, Bertalanfi). Maksvell had united the optometrist with electromagnetic phenomenas. Einstein had connected the space and time, mass and energy. Vernadsky united in a whole complex alive and lifeless material. The Cybernetic had opened the united laws of control in automatons and alive organisms.

Holists became not less, than in Ancient Greece and Roman Empire, but on their background the amount reduccionists and mechanicists powerfully increased. The practice has shown, that reductionism, and holism successfully completed each other.

Unclassical science of the 20th century newly addressed to paradigm of the wholeness in connection with the growing threat of the ecological catastrophes, but this does not signify that it became less narrow professionals (their amount continues to increase).

A holistic worldoutlook sometimes allows to save time, not to spend it on useless findings. As an example it is possible to bring the well-known anecdote from the life of scientists. An aspirant came to the laboratory and declared: "Professor, I have invented and brought the universal solution, it dissolves everything". On that professor has expressed the doubt: "Then in what have you brought it?"

Much rudiments of the classical science remain yet, which in the manner of scientific myths, scientific faith, in spite of the evident contrudiction, remain in a composition of the models of the World. The great inertia is not only in the ordinary consciousness, but it is also in the scientific consciousness too. More details about scientific myth will be in chapter 1.4.

So, in ancient times presentations about existence of the greatambience (the fundamental principle), about the unity of processes,

about the discretnost of the world, about the combinatorial mechanism of the development, about the cycling of the development were formed. These presentations are broadly used in our work and are concentrated in chapter 8.

Conclusion

1. The sensation of the unity, the wholeness of the world pushed philosophers on the quest of the first initials, from which all putting has appeared.

2. Anaksimandr "thought" apeiron (endless), something divine, immortal, eternal. Nothing does not appear newly in apeiron, there is everything already in it. The monad of Leybnic is also the whole "unit" of being, it carries in itself all-out characteristic of the world as a whole.

3. According to Dekart, from the tangled and unconceived chaos spontaneously, by its own powers the beautifully ranked cosmos is born.

4. In myths of Anciet Greece and in teachings of antique sages the chaos is considered not as the faceless abyss, but as the universal creative principle, potentially, in convolute type holding in itself all samples (forms) of the World formation.

5. Geraklit accents attention on the unity of processes. On his opinion, absolutely are not structures, but processes (motion). The Universe is not a condition, but is a formation. The fact of the world development has arranged in the modern concept of the global evolucionism.

6. The idea of the world discretnost, belonging to the pifagoreits, and emptinesses between them have got the material development by atomists.

7. Lukreciy Kar has added a variety to atoms and explained the development as combinatorics of atoms.

8. The atoms form curls, concourses, which involve in their moving mass of nearby atoms, the worlds appear (the hierarchy of the structures and processes).

9. The whole hindus thought on its essence is founded on the theory of cycles. Moving forward is introduced in the manner of the consequent row of the waves. Each wave rises and falls off again; for each wave follows the other one, which newly rises and falls off. In this work this thought is formulated as "Law of the life cycle".

1.3. The Unity of the subjective and the objective worlds.

So, a paradigm of the wholeness is a central paradigm of the science. With it are closely bound developed in a science and education the intersubject approach, the system approach, the unity of an objective world and the world of a person. Let us onsider these concepts.

If the world there is the wholeness, that means that all without exception is bound, including objective and subjective. Elven Aristotel defined the soul as the essence of a "natural body". "A soul can not exist without a body and be is not a body". As we see, ancient philosophers perceived the world more holistic, than their followers.

Today it is obviously that a person is a material object, consisting of the same material particles, as the lifeless nature. According Vernadsky all alive and lifeless material form united bound complex [39, 40]. But there is something in a person, causing frantic disputes from the timese of ancient philosophers. What is subjective, a consciousness, a reason, an intellect, a soul?

Spinoza considered fair that problems of the oppositions: a consciousness - the reality, got to know - incognizable are put false. [87] There are not two opposite subjects: a body (the nature) and thinking. There is one thinking body. Extent of the body and thinking is a characteristic of the one body, two attributes of one substances, two different ways of existence of he whole. The same matter thinks in a man, which spreads in-circle. According to Spinoza a substance (the matter) has many characteristics, but not only an ability to spread [197]. Strangely modern the thoughts of Spinoza sound. At present such approach to under study object is used in the system analysis.

Similarly (systemly) to Spinoza Shelling, Feyerbah, Engels, Marks, Lenin thought. "Reasons of the organism arising from the nature is necessary to search in the nature itself". "Not only stones belong to the being, but also a thinking body does" (Feyerbah L).

Marxism is a direct continuation of Feyerbah ideas. "Not I think, but a person by means of the brain is in a contact with the nature. A persons withdrawn from the nature, does not think. The nature there is an inorganic body of a person... " [130]. So, laws of human activity are, previously everything, the laws of that natural material, from which an

"inorganic" body of a man is built. "Ideal" according to Marks is a subjective image to objective reality. "Ideal there is nothing else but material, transplanted in a human head and transformed in it". Hereto it is possible to add that an ideal, subjective image and a model essence are synonyms. V. Lenin expected in the matter a certain characteristic, related to sensations a reflection.

In philosophical literature of 17-20 centuries it is possible often to meet a statement, that a person differes from animal, that selects himself from the surrounding world, i.e. has own "I" [147]. Let us consider this postulate not proved, because zoopsychology too little knows about animals' psychics. But there are experimental facts, calling in question unic of human "I". For instance, chimpanzee, considering itself in a mirror (apropos, much like this occupation), notices the specks of dust on a head and removes them from itself (not from the mirror picture), consequently, identifies the reflection with itself. Many animals, clearly feel the attribute to their pack, separate the encirclement on their own persons and someone else [69].

The other problem of subjective is cognition of the world. Kant has revealled all invariants, which for a thousand of the years is voiced about the thinking and came to a standpoint that it is impossible to build a satisfactory, motivated picture of the world, i.e. the world is incognizable.

The exact antipodes of opinion about the cognition of the endless in space and time of the world became firmly established by dialectical materialism. But also this postulate causes the objections. It is difficult to imagin, how under the final velocity of the cognition is possible to get to know the infinity. The logic founded on a good sense, constantly abuts against at the infinity. But the infinity is surd, illogical, liing beyond frames of the good sense. It is known the critiques of a good sense too. "Good sense is good only in four walls" (Engelis). But if four walls to increase up to sizes of the World, then such an "extended" good sense will become the worldoutlook. The borders of the good sense are agreed. Moreover, "without referencing to a good sense it is impossible the interpretation of abstract theories" [111].

The extreme standpoint on cognition of the world was voiced by Berkley. "Nothing does not exist outside and regardless of our perceptions". The errors of Berkley is possible to find, using the following system discourses. The perception is a process of the image in a consciousness an information about different sides of the observed object. But this is only an initial, voluptuous stage. A brain prototypes the object - a system from these voluptuous of elements. Any system underfinds characteristics different from the characteristics of elements forming it. This phenomena is identified as emerdgentnost - a characteristic, being absent in primary perceptions. Thereby, in a consciousness something different from amounts voluptuous perception (the model is produced from the feeling) appears. It gains emerdgentnost, new information. Consequently, the statement of Berkeley is untrue because in consciousness something appeared that was absent in perception.

Making sure in that the model reflects the objective reality, but not only exists in consciousness, is possible by the following way. If a model is capable to predict the events, taking place in an objective reality, and these predictions come true, (it is possible to confirm this by evidences), this is a proof of existence of the World outside of consciousnesses. These discourses are possible to illustrate by the following analogy. If you threw in a dark room a stone and have heard a ringing of a broken glass, this affords a ground to expect that a glass object was found there before your action. To avoid the hallucinations, it is possible to ask what other people heard, who did not throw the stone. If opinions of different notinteresting subjects coincide, that follows to acknowledge the existence of an objective reality.

Premarks materialism defined ideal as a reflection of one material body in the other (the brain) (Demokrit, Didro, Spinoza, Feyerbah). Marxism added these notions by beliefs about evolutionism, origin of the consciousness from the interaction of a person with the nature by means of a labour [87]. It follows to call an attention, that a reflection of one in the other on determination is considered ideal. However in the context of the quoting under the "other" the brain is. In more generalising determination **a reflection is a carrying of information from one material carrier on the other (a photography, a drawing, a stamp on the paper, a trace on the snow, a geological chronicle in the material of the terrestrial cortex and etc.). The reflection in the consciousness (the materil carrier - a brain) is a quotient by event of information traslation in the nature**. It is possible to consider that the reflection of the world in the consciousness came up as a result of the evolution of the matter, frominitial possessing ability of the reflection.

The reflection and modeling are possible to keep an eye even in mechanics. If one ball faced the other ball, has sent it a impulse and stopped, that second ball, having continued a motion, reflected, much exactly repeated, prototyped the moving the first ball. Herewith collision remembered (heating, deformation). But on this level of the consciousness overtaking reflection is absent. The more complex memory can be constructed when an ensemble of balls is used. One American physicist has voiced the thought that galactic nebulas, consisting of small parts of the dust, can turn out to be computers. Any computer - a network of triggers. The triggers can be electronic, mechanical, chemical, any other.

It is possible to consider one more problem, not faithfully worded so hitherto discussional. Materialism takes the matter as something primary, the source of all phenomenas, including the consciousnesses. Idealism removes all, including the matter, from the primary "spirit". The constant fight is between the "line of Platon" and the "line Demokrit", idealism and materialism, the question about correlation and nature of the interaction of ideal and material is solving [196]. As dialectical materialism so as objective idealists agree that the modern World is holistic, but why they are against the unity of ideal and material then? Why at the beginning initially must stand something united (or spirit, or matter), rather then the unity of the spirit and the matter. After all the statement that primary must be united, uniform, unseparate (monism) is simply not evident by a postulate and is the opposition to the principle of the world systimatic. If monism confirms the origin of the World from the united (spirit or matter), so the united initial can not be a system (the system consists of parts).It is necessary to answer, how a system appears from not a system. If allow the unite in the primary substratum the spirit and the matter, so this is already a system. The primary substratum initially must be a and. consequently, must integrate miscellaneous system, characteristics.

Half-way (holistic) teaching – dualism exists confirming equality of the matter and the consciousnesses. For instance, according to Dekart on the base of being two equal substances lie: the spirit and the matter, and this means that any object possesses a spiritual and material base. And there are a lot of unclear in this teaching [217]. The error of karteziants is in that they separated the spirit and matter as two different subjects though they consist in relations as two sides of one medal. Not two substances exsist, but one, possessing of two different characteristics. The thinking is not a product of the body action, but an attributive process, occurring in a body. The soul presents a condition of the body, but not the body in itself. It is possible to consider a question of ancient philosophers as long as you pleased, what was primary an egg or a hen, if do not understand, that an

egg and a hen are subsystems of the united organism. The system "an egg - a hen" evolved from their own predecessors, reptiles [73]. An egg and a hen appeared together. Reptiles and birds are born from eggs.

With all his dialectic Gegel could not understand, where the person unic ability to think came from. "Sensations without a person, before a person are nonsence, ideal trick" V. Lenin confermed [196]. If Gegel searched for the source of the human spirit, thoughts, marxists acknowledged only a person capable to think (and presently this myth flock-to bes running at page of the scientific print). The Dialectic, acknowledged the ability of the things to turn one into another, but taciturn avoided the ideas of global evolutionism, which in 19 century were unpopular. Confessed Only Darvin's evolution of alive, a lifeless material in the classical science was considered as eternal and stationary.

The answer to Gegel and Lenin from the positions of a global evolutionism modern sciences etology and zoopsychology can give. There is the psyhic in animal, they have emotions, elementary consciousness [79]. A person evolved as a reasonable animal. So an ability to feel and think he has gained from the biosphere, from the thinking of animals, from the synergetic of the World. Obviously philosophers under the influence of Nature Studing must change their look on the World.

The paradigm of the wholeness of the world brings to the need to acknowledge the interaction of the consciousness and being. The consciousness is not only the product of the world evolution (the component of the world), but also a facility of the cognition and transformation of the world. The consciousness assists the variability of the surrounding world. The consciousness as a product of the nature, a part of a system can not be completely autonomous. The human consciousness is coupled organical with the nature. Even the starry sky for navigator plays the role of the landmark. The knowledge of chemistry is required for practical integers of the survival. The art represents in itself a facility of the contact with a socium (selfpresentation to others). The contemplate of the nature is a cognitive activity. The labour is not simply a transformation of the nature, but an interaction of a person and the nature. In the course of labour a person changes, so the nature does. The labor experience corrects the false conclusions of a person. The labour changes the forms of the body and the functions of internal organs of a person. Being defines the consciousness, but also the consciousness influences upon the being.

Integration of the consciousnesses and the objective reality is possible to motivate by the following logical chain. The brain does not think without a human body. The body does not exist without socium. Socium does not exist without biosphere, and biosphere - without the Universe. So, for thinking the whole hierarchy of the structures is needed i.e. the whole Universe. The brain is sunk into the world substratum, consequently, there is the ambience, interfacing all people and all belongings into united integer.

A person by means of his activity continues to create noosphere [202, 173]. Making by a person an "artificial" ambience, forms the system unity with its creator. A person, complementing himself by technosphere, creates a complex of a person - a machine outnumbered on intellect the creator himself. The model given birth in the consciousness, can by means of labor actions of a person to materialise into the products i.e. "be reflected" on any other material carrier (the models, formulas, graphs, algorithms, mathematical constructions, transfirmations of the nature). The virtual models in the consciousness actualise in a labor activity of a man that in terms of the information theory is called the carrying of information from one material carrier on another.

The theory of the reflection must imply not only the reflection of the World in consciousness, but also inverse reflection. The inverse reflection is realized as a labor activity, materializing of the models of the consciousness in the objects of the creative activity of a person. The main task of a person is not a passive reflection of the world (the first stage), but the inverse reflection that is transformation of the world for the reason of the self-preservation and development. The ability to the inverse reflection is possible to notice in many living beings. Any essence is sunk in ambience of living and by its own actions inevitably renders the influence on it. These actions can be reflexive, but also reflexionns present by themselves the models of the behaviour. The labour is possible in common define as a process of the inverse reflection of information from an organism into the surrounding ambience. In the frameworks of this determination of any actions of the alive organism, influencing upon the ambience, it is possible to name labor.

For the best understanding of the differences between the ideal and the material it is possible to resort to the following analogy. Office print (the material thing) keeps on its worker surface the information. A print of the seal on paper translates information from one material carrier on another. The image of the office seal in the brain (ideal) is a result of information carrying from the metallic material carrier on neitron material carrier. A print on the paper and "a print" in the brain are analogues of the reflection. So, by means of the notion "model" it is possible to show the resemblance and the difference of ideal and real (material).

The models are not copies of the objective reality, but present by themselves evident simplisities. Any model always has restrictions in applicability. For instance, geometry of Evklid is equitable if all constructions occur on the plane. But an ideal plane is an exclude-flesh rare event, more often the twisted surfaces are met, and on them amount of corners of tringles more or less then 180 degreez. Measuring spherical Earth by geometry of Evklid, we are mistaken, but it is better to measure with an error (sufficient for practical integer), than not to measure at all. The more complex geometries appeared after Evklid geometry on the twisted surfaces (Riman, Lobachevskiy). For practice it is important only one that models "functioning-" i.e. allow to survive and to solve the practical tasks.

The model (ideal, subjective) is always simplier, than the objective reality and not only therefore that some details of the object are unknown. Insufficiency of the brain compels often artificially to simplify the image of the complex object to get at least some decision.

To agree with Kant, it follows to acknowledge that the absolute knowledge can not be. The knowledge is a model. The growing of the scientific knowledge mainly elaborates the former models and seldom completely refuses them. More often new models are synthesized as combinations of "old" (the principle of Bor correspondence).

The situation of modeling is colorful reflected in the ancient Indian parable. Three blinds tried to know, what an elephant is. One tuched a tail, the other tuched a leg, the third researched the side of the elephant. "Elephant is as a rope, "- the first has said."No, elephant is as a pole," – the second has said. The third compared the elephant with a mountain. It is seen that, getting to know new, we inevitably compare it with the known earlier i.e. available in memories. The image of the "correct" elephant could appear only at syntheses of the opinions of the miscellaneous blinds, or from the syntheses of the presentations of one diligent blind, which tuched the whole elephant.

An "instrument of" cognition of the World is a brain. The vision, the hearing are only receivers and retranslators of information. It is not a trouble that we do not hear ultra - and infrasouds, do not see ultraviolet and infrared radiation. The complex brain is capable to compensate the imperfection of feeling organs (this was over and over again proved on the example of the people, deprived of the vision and the hearing). A person prototypes the world by a brain, a reason, a consciousness. However, in spite of this, a person knows the world not such as it is indeed.

A person learnt to compensate the imperfection of feeling organs by corresponding technical means, inventing corresponding instruments, and in this is the main difference of a man from an animal. But extension of information channels, increasing of their admission capablaty and speeds did not avoide the restrictions in the "design of a brain", did not increase the functional possibilities of the consciousness of a person. A brain remained such, what it was created by nature, and it is difficult (perhaps impossible) for human civilization to overcome "antrope" restrictions. Is it able to make the technogen intellect, time will show.

The classical science is abstracted from a subject of the cognition. Unclassical science acknowledges the subject. **Postunclassical science considers the study, as an interaction of a subject and an object**. This very important principle of the postunclassical science is often forgotten, which brings to incomprehension of many phenomenas. In this monograph the using of the principle of "presence of the subject" allowed to explain that there is time, space, order, chaos (ch. 1.7 - 1.8). Let us stop on this in detail.

The subject (for instance, a person) is connected organically with that ambience, which studies. Any study always is an interference. A man came in the wood for it study, by his presence changes the natural balance, which was before his appearance. Any instrument, sensor, tool renders the influence on behaviour of the under study object. In the classical science people tried to minimize the effect of the watcher presence to get an "objective" picture of the world.

Postunclassical science, particularly social science and philosophy, must not exclude the watcher, because this distorts the real picture. Many notions: time, space, order, chaos are results of subjective perception of reality (refer to section 1.4). These images do not exist outside the watcher and are not reflection of being, but instruments of the cognition (either as philosophical categories). Let us try to understand this. We shall consider, as the perception and the reflection of the world are realized in the consciousness of a person. At first sight on a flower it is impossible to say anything about the process of growing. Daily watching will bring about to the output that the flower height increases. To draw a conclusion about dayly increase, it is necessary to remember the yesterday's height of the flower. Not only to remember, but also be able to compare yesterday's with present-day. If "memory is short" and the yesterday's image is forgotten, changes in the object of an observation are not fixed by the consciousness. So, for perception of the development dynamic it is necessary the permanent memory, as well as ability to compare different images. Organs of feelings do not possess such ability (or possess in insufficient degree), so perception of the world is realized by a brain.

If an object is researched, which does not change in time, extensive in the space, then for its perception memory and ability to compare of images are required. At making a map separate areas of a territory are researched for years. Studied separate fragments are kept in the memory (reports, books, drawings). These fragments are connected, putting together in something integer. Even when we consider the portrait, an eye on parts scans the picture, remembers the fragments and synthesizes the image in the consciousness. The study of a static object also is unrolled on time, either as study of the dinamic object.

Coming back to the parable about blind men, it is possible to add that the unadulterated picture of the elephant is not to manage to get even the blind would feel all parts of the elephant, but herewith all forgot. His impressions about the elephant would form according to the last sensation. Good lecturers know the last phrase is remembered brighter, so make their speech corresponding to this. **So, an absence of memory deprives the possibility to perceive the world, form the image of time and space.**

Given examples show the importance of the holistic perception of the world, where the consciousness is not separate from an objective reality. To acknowledge "separation" of the consciousnesses from the reality means to abandon of the paradigm of the wholeness. Let us take the additional discourses to show the system unity of the consciousness (ideal) and the objective, material reality.

The consciousness prototypes, reflects the world in the form of the internal sufferingses. The consciousness also is an objective reality. Objectivity of "someone's else" consciousnesses does not cause the doubts, because any "other brain" presents in itself an external ambience for "my" brain. More often people doubt in the objectivity of their own
consciousness, their "I". We shall show a resemblance of the processes in the objective and subjective (I) "ambiences".

• Above it was already marked the unity of the information reflection processes (the direct and inverse reflection).

• In ambience the circulation of information flows exists, and inverse, intensive information flows exist in the brain.

• Birth of the new information in thye ambience and in the consciousness is realized by the way of combinatorics (in detail refer to chapter 5). The consciousness can reflect not only the combinatorics of the objective reality, but can speed to realize the combinatorics of a rumpled (virtual) reality, creating images - chimeras. The consciousness presents in itself a tool of the nature, specialised on the combination of information (modeling).

• A brain, either as the whole World, is a system, consisting of elements and relationships. There is a filtering of information in all without exception information processes of the nature, including the consciousness (refer to chapter 3).

• Evolution of the biosphere is aimed to increasing of agregirovation of the alive thing. And an evolution of the reason is tracked from separate neurons up to the most complex neuron sets of the brain.

• All surrounding things and a brain consist of similar matter and are shipped in the general material substratum. However a brain is separated from the surrounding ambiences by barriers (the skull) and information filters (selectivity of sensors). Flows of material and energy through a brain are measured in order not to create the hindrances of the thin information processes of consciousnesses.

• Certain separativity of a brain and a consciousnesses from the surrounding world, is identified as "I".

• "I" - a complex of the direct sensations of a brain, outgoing from elements, important for its existence, located in a certain part of the unceasing space, subjective sepasrated from the surrounding ambiences,

1.4. Concepts of outlogic methods of the cognition.

Logic is understood as a theory of the cognition and ontology of modern materialism. For the first time logic, as facility proof of existing argument, Aristotel created. He did not think it, but explicited from speeches of orator-sophists. Consequently, the last intuitive used the convincing system proof. People, who complied with their system of proofs, intuitive believed them i.e. practically owned the logic. It remains to expect that logic is "wired" in consciousness (the subconscious) of orators and listeners. The concept about the existence of general algorithms of the brain work has found its reflection in works [112, 32].

According to Kant logic - a science, strictly proving formal rules of the thinking. Its rules are so that to any nonsence is possible to stand the logical justification. The foolishness liberally can pass through a filter of the general logic. Medieval scholastics transformed the logic into the instrument (organon) of conducting futile debates. Philosophers of 16-18 cent. did not use the meaning "logic" as a science of thinking.

They entrust logic therefore that it sometimes brings to prooves, decisions, which at examination turn out to be correct. Correct can be only such decisions, which does not disagree with the laws of the nature, laws of the development, when a reason generates a predicted effect. All dialectical schemes and categories, revealled in the thinking by Gegel, present themselves universal forms and laws of the development external, real world, which were reflected by a collective consciousness of that time. Spinoza interpreted logic as an attribute of the nature integer, a way of expressing the general order and relationship of the things [87].

The dialectical logic presents not only a science about thinking, but also a science about development of all things. Dekart and Leybnic dreamed of the creation of a "universal language", a system of terms, allowing purely formal operations.

Coming from the stated, logic must develop constantly on the measure of the world cognition. Unperfect logic can allow the errors. Fihte sudgested if you faced the opposet; unsolved in the course of logical discourses, begin to behold. The contemplate has more high rank, than rules of the formal logic [196]. From thoughts of Fihte it is possible to extract one more output. Logical findings appear at a rate of consciousnesses. The contemplate occurs both by consciousnesses and subconscious, so Fihte gives a preference to the contemplate. If the subconscious at a rate of intuitions allows to take the faithfull decisions, consequently, laws of the development of the world are there in the subconscious. Many scientists keep such standpoint. "All processes in alive reflect the requirements of being, ambiences so all laws and algorithms of the ambience are wired in alive" [147].

The role of the subconscious in the thinking activity of the people are enormous. It realizes the syntheses of the new knowledge from diffused elements. A.E. Mamchur considers that on the cognitive level the processes of selforganisation, unexpected decisions, lighting up can run [131].

The new knowledge is formed always in the subconscious at the beginning. All that consciousness capable to give as new knowledge, is already given in unconscious type [209]. But conscious work functionly is connected with subconscious functioning. It is possible to expect that the logic of unconscious differs from the logic of the consciousness. It seems that a genial person has inwardly its reason some sort of homonusculus or a mental daemon, spying on his own thoughts [101].

An evolution epistemology witnesses that (pred) reasons (coming before a reason) built-in enough deeply in the structure of the human personality because they have an evolution origin. The world of the average sizes, in which a person has adapted, is a cognitive niche of a person. A science reveals prejudices, but can not exclude them from the consciousness [101]. **The linear thinking and the linear logic is "wired" in the consciousness. Antropocentrizm can not be abolished.** Every person feels himself in the centre of surrounding. Structures of the consciousness carry in themselves information about past and future. The past reveals itself as rudiments, and future as mutations, fetuses. This gives to forecastomers a possibility to forecast. Zaratustra spoke: "I go amongst people, as amongst debris of future: that future what I see" [158].

Traces of past always are in present (heredity). They are saved in the course of the evolution in the genetic memory of unconscious. A person carries his history (and rules of the problems decisions) in himself i.e. a person possesses the philogenetic memory.

The practice of meditation presents by itself a creation in the brain the structures, capable to go in past and future [101]. A child is opened to any perception, his thought is not locked by experience in the past. The sounds of all available human languages are pronounced by children before a year ". The ear of an infant is opened for assimilation phonemic building of 7000 languages. However, in the course of assimilation of the native language, "casements" are closed [23].

Each stage of ontogenese closes the former degrees of the liberty. Univariate adult - degenerationed children. However, it is possible to think that innate degrees of the liberty do not disappear, but remain to smoulder in the subconscious, as a genetic memory.

Patterns of thinkings become the parameters of the order, which enslave each scientist. The inertia of the thinking, its dogmatization is processes of making up homeostativation models.

New presents heresy by itself for carriers of the paradigms. Dogmatization develops in the following sequence: a teaching - a doctrine a dogma. A dogma - a stage of the degeneration of ideas. A canon is a stage of the degeneration of the method. "Usually new ideas win not so that their enemies are convinced, and they acknowledge their error, but most so that these enemies gradually dye, and the growing generation adopts the truth immediately" [171].

Rotenberg selects two types of the thinking [188]. The logic - verbal thinking (on the base of a speach) consecutively crushes an object (the analysis) and creates the fragmentary perception. And the vast-figurative consciousness, which is not bound with a speach. The hinking is continuously, and the consciousness is discrete. Diskretnost is reached by means of verbalisation.

The thinking is not exhausted only by a conscious form. Information is too complex and nonlinear to be a cavity adopted by a logic - sign thinking.

The realization appears on high levels of speech plans, but consciousness itself comes from unconciouness beginning. The analysis, synthes, induction and deduction can be realized at a rate of unconscious. "Truth is gained not by a price of the conclusion, the process of a creation activity is made unconsciously, a formal logic does not participate here. It falls into consciousness in the manner of the ready judgement" [147].

A well-known scientist - writer I. Efremov in his novel "A Blade of the razor" explains, what a beauty is. Beautifull is that, what is reasonable (the question is about proportions of the human body). We perceive the beauty by the subconscious, without explanation, without analysis. When we tell "beauty", this means that subconscious has conducted the analysis and gave the decision in the manner of emotions. "Native objects are beautiful, because they are reasonable" [18].

K. Gauss said: "My results I have long ago, I only do not know, how I will come to them [147]. Einstein told that his internal installations, a feeling of a purpose directed a motion of a thought. A search carried the directional nature. In the opinion of Sh.N. Chartishvili, a thought is formed earlier, than is arranged in a language" [147].

Fon Neyman noted: "In the pure mathematics powerful methods really turn out to be to be useful in that case, if there is already a determined intuitive contact with an object, if even before undertaking prooves we already have a certain intuitive presentation, which after in most cases turns out to be faithfull" [147]. Mathematics becomes the effective, when a deep profound analysis is organized beforehand [151].

It is impossible to identify an intuition with all unconscious. The intuition presents by itself an intermediate section of conscious and unconscious. The intuition - a part of unconscious system.

Different standpoints on intuition are the following: 1. Unfeelling perception of the special mistical reality (Platon, Aristoteli, F. Akvinskiy, N. Kuzanskiy). 2. Achievements of the new knowledge, do not coming from a proof of a wit (Dekart, Spinoza, Leybnic). 3. The intuition as not-mediocre voluptuous perception of the world (Kant). 4. The intuition as a mystic ability of the penetration in depths of the individual consciousness, understanding of "I", life, existantions (Fihte, Shelling, Bergson, Gusserel).

The logic of the world, the logic of the interaction of a person with the world are reflected in structures and ways of the nervious system operation. In structures of the brain the history of the interaction of the organism with external ambience are reflected. This history defines all further perceptions (a mental filter). The structure analyzers is such that it is intended not only for thereflection of the external world, but itself serves its reflection [109]. "An ability of the reflection expects the internal kinship of substratums displaying and displayed [161]. The brain, a nervious system are considered by some authors as a device, prototyping the external world [109, 67]. For this reason "a wild men" is capable to be trained as a civilized person. His neurone structures are similar to all-human structures of the brain. People of miscellaneous continents use similar acceptances, methods, facilities of the survival, fight for existence in their activity.

These findings are very useful for understanding the human history. During millennium people made actions and acted, deterministic by programs of the behaviour mortgaged in the brain, and will continue to do that (in detail refer to chapter 7).

So, the logic of consciousnesses and subconscious exist. That is why intuition is included to the unlogic methods of the cognition by a mistake.

The ancient philosophers were contemplators i.e. used the logic of the subconscious and logic of analogy (the consciousnesses). Platon said: "Actions of a person are not always subjected to the influence of the reason. Certain actions are possible to explain, having acknowledged that there are unconscious desires in a soul". Modern people are powerfully dependent on a good sense, "wired in designs of a brain". The good sense does not allow the consciousness to leave the frames of what is no in a databank of the individual and public consciousness. Give to somebody a task to draw the image cosmic essence from the other galaxies. In illustrations of the fantastic product of all times there are enormous amount of such examples. All images are combinations of the fragments of known living beings on the Earth, but most often in these chimeras antrop signs are viewed (refer to the illustration on the cover). An image, not having analogues, consciousness can not be identified by the consciousness, is perceived, is sent to others. That is why for the proof of invention is required to bring several analogues and a prototype. In teaching the new material it should to demonstrate the examples, analogues to the students. The science resorts to metaphore so poetry does. It is easier to explain by analogies, metaphores. Art on the integrality approaches with philosophy.

The similar problem appears at modeling the general, the inicial matter, beginning ("creation") of the world. If such brain is find, which will be able to manage "beginning", so it can explain this to people. In the structure of the human brain the experience of the whole biosphere is wired (the common sense), but hardly there is an experience of the stagnation evolution, lifeless matter (when there were not neurone structures).

Mathematical prooves of the new knowledge can be shown as a result of a pure thinking, where there is no empiric. But in geometry all begins with acsioms ("truths", not requiring a proof, but taken on faith in connection with a big empirical experience). An empiric experience of acsioms is limited by frames of human practical activity, frames of a certan horizon. But the trend of the acsioms spreading is observed, empirical experience behind the horizon of their applicability, validity. Parallel, direct lines are not crossed only in the zone of available observation. But what will occur in the infinity?

After axioms the logical actions follow, turning round in a witness. The logic is fromed from an empirical experience and formalized in rules. That is why mathematical operations are results of beforehand dug empiric. But as soon as matematitions try to leave the frames of an empiricism, much of transcedential appears .

On determination of the geometry a point (the unitof the whole) has no amounts (a zero dimensionality). But a line is a geometric revenge of points and has a length (one dimensionality). Logically it is not impossible to imagin, how from the amount of the zero dimensionalities (points) the number (one measured line) is formed. It remains to expect that a point is an abstract mode of an indivisible (an atom), amounts of which overrun the frames of the good sense. Outside the borders of the good sense there are infinitely small and infinitely great values.

The consciousness of a person prototypes both as "external" world, so as the "internal" world. It is impossible to be in the other way because the internal and the external form the wholeness, the unity (refer to section 1.2). The brain is a structure, generating processes, named by the consciousness. The cortex of a brain generates the processes in greater degree oriented on the reflection of an "external" ambience. This evolutionyounge structure particularly is powerfully developed in a person. More ancient that is why the more "experienced" part of a brain, is identified as the cortex. The cortex is capable to execute simaltaneously enormous amount of operations on the most complex control of the human organism. The consciousness (the cortex) is capable to make simultaneously one action of a brain. Try simultaneously to solve the mathematician task and to write the poem. Some people are capable quickly to switch on miscellaneous actions that produces an impression of simultaneity. The consciousness is not capable to handle the multivariate images (maximum three-dimensional), but the subconscious, obviously is capable to do so. That is why very difficult tasks, lighting up, descoverings often come from the subconscious (the table of Mendeleev, a construction of the bensol ring and etc.).

Mathematics presents in itself a language of the consciousness so all mathematical models are maximum simplified. The samples of such simplification are beliefs about three-dimensional space and univariate time. The consciousness formalizes beliefs about space through the Dekart coordinate system, the whole three axises of which are endless, direct, with even metric system.

The Dekart coordinate system does not exist in the objective reality. It is a tool of the consciousnesses for formalization of the sensation space. The Dekart system is the simpliest from all the possible systems. It is possible to present the coordinate system from any quntity of axises, axises can be nonlinear, twisted (the image of the octopus), but Dekart, naturalliy, has chosen the simpliest model of the coordinate net, sufficient for an adcvate description of the space. It is possible to bring forth the hypothesis that then subconscious uses for the world perception more complex coordinate nets. The space is multivariate, and only the consciousness tries to put all its variety on Procrust bed of the Dekart coordinate system.

It is enough to track the scheme of the scan eye of some subject. The scheme of the scan, control of the eye moving comes from the subconscious. The eye reads information from an object not on the Decart coordinate net, but on more complex and more rational scheme. First "runs" on sidebar of the scene, then on less important area, but never makes the parallel scan. The retina of an eye splits the scene on quantums, not-homogeneity, which the brain "packs" in image.

"According to Dekart", for instance, the television screen works. The drawing scene electronic ray plots parallel "lines" on the surface of the screen. A television set is a result of a creative activity of the human consciousness, which can not dispose of its innate 3D. The machine fabrication of carpet drawings also uses the rowwise system of the information image. However an artist draws in the different way as TV does.

In the classical mechanic for the description of the world it was enough three-dimensional net of Dekart and univariate time (about time and space refer to ch.1.7). Einstein in STR revealled relationship of time and space (it is impossible to change the space without changing time), but saved the Dekart coordinate system. However Einstein entered the beliefs about nonlinear, twisted space though continued to describe it as the linear coordinate system. For the description of twisted perhaps, the net from more then three nonlinear coordinate axises will be appiled. In geometries of the twisted surfaces (Riman, Lobachevskiy) the Dekart coordinate system is used, so these geometries look very complex.

The mathematical image of an object depends on the coordinate net use. It is simply to describe a point and a line in the three-dimensional system of Dekart coordinates. However some processes and phenomenas practically are impossible to describe according to Dekart. It is impossible graphically to depict evolution processes on the interval of milliard years so, as on them biologic cycles by duration of millions of years and cycles of human history of hundreds of years fitted. For this axis of time with the scale of the fission as one year in one millimeter will stretch on a thousand kilometres (10⁹ mm.). If axis of time to make nonlinear, logarithmic, it is possible to dispose the depiction on a sheet of paper. So, a mathematical image of the object, its difficulty depends on used coordinate system.

Simplified mechanical model of the mathematical pendulum dispensed by the notion "stake-beating near the point of the balance". In a modern picture of the world the point was transformed in attractor - an area of the balance, in the zone of which the moving of the system is. Attraktor in the Dekart coordinate system (the phase plane) is described by complex system of the nonlinear equations, many from which have no decisions. It is possible to expect that, selecting the corresponding coordinate system, an image of attractor will be managed powerfully to simplify. This task is possible to consider as the new scientific direction in mathematics, the development of which will let to look at the world by "eyes of" human subconscious.

The sensation of time in STR also changed. Time became relative, the moving of time changeable. Modern concepts of internal time of the miscellaneous object and inner space appeared (refer to ch. 1.7). The development of science goes from simple models to complex, so tools of thinking also become complicated. It is possible to assume, that consciousness begins to use "instruments", which subconscious has used long ago. This suggestion goes from the trend of morphological changes of the brain to the side of frontal shares increasing and thicknesses of the structures responsible for consciousness more and more isolated and developed [222].

The cognition not always goes from an experience. The modern science about a microwold, about a depth of material develops from theoretical guesswork of physicis, but while imaginative models are not confirmed experimentally, they continue to remain hypothesis. If a theory of relativity has not predicted the possibility of the light ray twist in a gravitation field, nobody will conduct an experimental check. Most certainly, there is a limit of the experiment possibilities by powers of noosphere at studing superthing structures of the vacuum. For this it is requared to reach the energy levels on orders above, than it is possible at present. We have never shall be able to model the Big blast, which led to the Universe origin. Outside the borders of the empirical "good sense" the area of truly outlogic, the area of the faith begins.

1.5. Faith and Myth as a Way of the Cognition.

Usually notions religion and faith are united in the united semantic complex. Religion is based on the faith of a person creation, on fairness of the "Dod's law" and on a collection of other dogmas. But the notion "faith" seldom appears in scientific disquisitions. It is considered, that science is founed on strict empirical facts. The scientific facts can be prooved, they are reproducible and checkable. Let us try to prove, that faith is a genetic given component of a man's phychec, which reveals in all spheres of human activity, including a science.

A person survives and develops only due to an accumulation and useing knowledge. Other ways of adaptation to ambience of environment a person "has lost" in the course of an evolution. Education in a germinal form is known in an animal's world, but it has found the all-out scale only by people. And in this process a person is constantly improved. A person, either as the other animals is born with a genetic set of given behaviour programs. One of the main genetic programs is a curiosity. This program is brightly denominated by all highest animals and particularly brightly – by a person. Curiosity presents by itself a program of the cognition, education.

A newborn essence is connected to a social bank of information (first of all through a mother) and without analysis carries new knowledge in its brain. For the critical comprehension of these new knowledge a child has no established thesaurus jet, so everything is taken by faith. Imagine, that a child does not believe in the absolute of knowledge of his own parents, and in that his ma is the most beautiful. Is it possible to realize an education in such conditions? It is not necessary specially to prove this thesis. It is enough for everybody to recall his childhood and experience of the children education.

However, in genetic programs of the person behaviour also program of misstrust, contradictions, an attempt to act in one's own way "is hidden". This program "awakes" at the age of 13-15 years, when is already accumulated a certain thesaurus, a criticism and a leaving from a faith to a mistrust appear. This is a manifestation of the program of empirical

searching for of the new knowledge, i.e. a genetic foundation of the science. So, in person there are two complementing each other programs of the cognition: faith and disbelief.

These genetic programs accompany any person during the whole life, increasing or becoming weak at different age periods. Each person is unique and inimitable, so there are people with a brightly expressed program "not faith" (Thomas nonbeliever), and people of the absolute faith (blessed, who believes). But more often both programs are balanced. In relationship with said it is reasonable to consider the notion "faith", which as a method of the cognition reveals itself and in science, and in religion.

A construction of models in the consciousness is always realized at deficit of empirical material, because it can not be full knowledge. So during construction the models inevitably it happens to fill the gaps, resting on faith and suggestions. So, any knowledge, any imaginative model contains elements of the faith.

After a model is built and presented on a court of the public, it is subjected to the critic. Any message, discovering they try to criticize in order to "close". And only, when it does not manage to close, then they receive it at a quality of a model, satisfactorily explaining the nature of some phenomena. Checking models on capacity to work (the absolute truth can not be) is realized only empirical. If a model "works", so forecasts, coming from it, must come true with enough high probability. An unworking model is declared a myth. A myth there is a model not identical to the being.

Often the unecseption of a new model (the new picture of the world, object) is defined by the limit of the critics thesaurus. "New" does not find the place in "own" kit of the critic's models and then novation is declared as heresy ("this can not be ever"). It is enough to follow the "introduction" of the Einstein theory of relativity in the public consciousness, or transition from geocentric picture of the world to geliocentric [73].

The method of the checking and improvement of the models lies on the base of the scientific knowledge. The models become more identical to the real world, but they are still simplified. Any "scientific" model has restrictions in applicability ("too generalised statements are undoubtedly untrue"). Insufficiency of the models applicability, laws, knowledge is defined by that, that elements for building models are extracted only from the zone which is available to observation. As a rule, a model is checked on a capacity of work in this zone. The extension of the models out of the "near zone" limits can show its inadequacy of new conditions. But scientist very often make this error, expecting unlimited possibilities of the models designed by them and trusting to the feeling of a faith. Below the examples of such ungrounded extensions will follow.

If a novation was able to protect itself empirical, so it moves to the bit of obvious ("who does not know this") and falls into textbooks. For students with a limited thesaurus yet a textbook is a subject of the faith, because a student can not check its contents. For the majority of mankind such faith remains on the whole life, because a sphere of an individual activity not always provides the occupation by science. Only for much limited circle of the people, coming on the way of a science, contents of books will become the subject of critics, analysis and a spring of their personal creative activity.

A primitive person did not separate a labor activity and a production of the knowledge (though priests, shamans specialized on the creation of myths, a primitive spiritualism).

In myth a faith and knowledge are not divided yet. A thing together with a situation is reproduced in a common, undevided "image-complex". And a subject of an artistic creation activity is an expression of the author himself. An author expresses himself in a subject, the identity I - a subject is created. The modern artistic creation is related to an ancient creation of myths.

All rituals are specific languages of the mythological thinking. The mythology is anthropomorphous (the first standard of the world - I), regularizes the experience, bolts firm, repeated relationships. A transition from mythology to the rational cognition occurs in the course of of the consciousness of a civilisation.

Religious models of the world creation were formed by mankind from the deep antiquity and were forerunners of the scientific models. All the world religions are models, explaining, how the World and a person appeared, and how it follows to lead oneself not to destroy this creation. It is impossible to check these models empirically, that is why they are absolutised and recommend to take on faith. In this the difference of the scientific and religious methods of the cognition consists.

It is possible define two varieties of the faith. The faith as a facility of the cognition, a facility of a filling gaps in the empirical experience. And the faith as a facility of the creation comfortable conditions of "a soul", a faith

as an illusion, running from the cruel truth. The scientific faith is subsequently substituted by an empirical experience (if it manages). A "comfortable" faith is afraid of the denouncements, tries to be kept. It executes the psychotherapeutic role. Both variants of the faith have practical importance. **So, the faith and superstitions are a genetic given attribute of the phychec of a person, consequently, checked by a natural selection and are expedient**. Let us consider some scientific models, taken on faith, which became dogmas.

It is known that axioms - statements, taken on the faith without a proof. An aksiom about existence of the disjoint (parallel) direct lines is an admission, not proved experimentally. Nobody can reach the infinitum and check what will happen there with so called direct lines. And if a space is locked, the direct lines must transfer the place to geodetic lines, which can joint. But in the near zone a phenomena of disjoint direct lines was set up with a certain accuracy and it remains to believe, that at infinity this fact can be safed.

We continue to believe in the fairness of the Euclid geometry, on the ground of which is asserted that the amount of corners in a triangle is 180°. However such statement is true in the only one way, if all constructions occur on a plane, but a real plane does not exist. Moreover, geometry is intended for the Earth measure, but a surface of the Earth is obviously not a plane. But this fact is already understood and geometries not for a plane (Lobachevskiy, Riman) are created.

The superstition of geometry consists in that a triangle contains only three corners, but it is possible to show that except three corners, this figure olso contains an ensemble of corners of 180°. It is known that a corner of 180° degenerates in a line and meets with side of the triangle [65].

The modern science is also packed with superstitions, as thousands years ago. Many dogmas are outside the critic only therefore it is impossible to criticize them by the reason of their accessories to authorities, and the majority thinks so, that it is ordinary and does not disagree with the "good sense". Often publishers refuse to publish articles, because of much disputable moments in their contents. But who needs "undoubted" works, which are accustomed, correspond to common views, i.e. do not carry new information. Such approach is fit for textbooks, but not for scientific studies. However, it is important to conduct the alternative interpretation of the disputable hypothesises and models in textbooks. We shall continue the examples of the scientific dogmas.

The constancy of the light velocities in vacuum, prescribed in the base of the Eyenshtein theory of relativity is only a postulate. The speed measurements of the light were conducted near the Earth in intervals of tens years. This empirical experience reflects the instant at time and the point in the space, because the Universe exists duaring 15-20 mlrd. of years. All this time it increased, the characteristics of the ambience changed, on which the light spreads. It is known that a velocity of the waves spreading depends on parameters of the ambience. When the light gets through the water or the glass, its velocity falls. Parameters of the ambience change and the wave velocity must change. Vacuum, on which the light spreads, is not an emptiness. Why all without any word agree with the myth about constancy of the velocities of the light always and everywhere, even" on the age" of the Universe, but herewith all speak about different phase conditions of the vacuum. The Einstein postulate is accepted on the faith, and this fact, perhaps, hampered the development of science. If the velocity of the light in vacuum is not constant, so people need to revise the notion "world constants". Meanings of "constants" can change in the course of the Universe evolution, confirming the paradigm of the global evolucionism.

The argument about impossibility of exceed the velocity of the light is an equation of Einstein, from which the intensifying increasing the mass of the movinging body with growth speed follows. At achievement of the light speed the mass grows to infinitum, but this is an absurd. That is why an output is done, that velocity of the light unattainable for massive things. However achievements of sinergetic, researching processes with intensification (on sedate law, similar to equation of Einstein) confirm, that all speeding up nonlinear processes do not reach enddlessness, but stop their growing and even go on decline [101]. It can be an increasing of the mass will occur, not exceeding a certain limit (it is impossible to check experimentally because velocities close to light's ones are not reached). This means, that prohibition on motion with giperlight velocities are premature.

One more contradiction also exists, calling in question findings of Einstein. A modern cosmology presents our Universe as an expanding object. Herewith the most remote from the Earth galaxes ostensibly run with a speed 20% less of the light's only. This means that masses of these galaxies at similar amount greatly more, than our galaxy "Milky Way" has.

But since the motion is comparatively, that watcher of that remote galaxsy will think, that we remove from them with the light velocity. Consequently, he must consider, that our galaxy must be by mass on orders more, than it seems to us. It is so that a mass is a relative notion. As it is seen, plenty of inconsistent standpoints on condition of our Universe exsist and in the theory of relativity there are much discussion moments.

Taciturs is expected that gravitation interaction spreads with the light speed, but nobody has found the gravitation waves yet and, consequently, has not measured the velocity of their spreading. Again the faith is. Besides, gravitation constant (the constant) is measured comparatively recently (Newton), but what was it milliards years back? Is the gravitation "constant" the constant or its meaning drifted together with the increasing Universe. There is no answer, and it happens to believe in dogmas.

To measure gravitation between elementary particles nobody could manage yet, because of very small weight of their masses, so it is possible to doubt in the versatility of the gravity law. Has it kept the dependency of the gravitation power attraction from the square of the distance under endless small distances? Or does the factor of a degree change? Following the faith in the impossibility of infinitely greater power of the interaction (and they appear at distances, striving to zero), it is possible to expect the insufficiency of the Newton equation.

The belief about the expanding Universe rests on the effect of the "red offset" of the light waves spectrum, going from distant galaxies, open by Habbl [29, 56]. For the first time, the races-widenning of the Universe "have computed" by mathematicians (Fridman), coming their beliefs about curvature of the space, then Habbl has noticed the red offset in spectrums of galaxies and has explained it by the Dopler effect, in the opinion of majority, has proved thereby an extension of the Universe. The red offset without alternatives is explained by the effect of Dopler (if a radiating object deletes, the frequency of the radiation must be displaced in the long wave area of the spectrum, to the side of the red light). Exactly so the velocity of the removing the galaxies is calculated.

But the red offset of relict photons, alternative is explained by that photons, were borned 15-20 mlrd. years ago, simply "have coolled off", have lost their energy because of long walking in the Universe and now surround the Earth with all sides in the manner of the relict background (the frequency of the radio).

The analysis of the photons behaviour near the black holes also allows the red offset, if a photon deletes from a "hole". Gravitacion braking of the photon can cause the red offset [146].

So, there are alternative explanations of the red offset: effect of Dopler, photons "cooling off" and гравитационное braking. Perhaps, the effect of the red offset is caused by different reasons, and then the age the Universe and its amounts will be necessary to revise.

It is possible to consider the Universe as uniform only in megascales, but in a scale of a photon it is very lumpy. Constant meetings with material, gravitation on the way by length in milliard light years must make the way of a photon stochastic (as through the turbid glass), but why do astronomers see the clear images of the galaxies, starry concourses?

Lyudvig Bolicman on the basis of the simplest system (the ideal gas) has removed the function of the condition, named entropy [165, 175]. Entropy has tied with the measure of the disorder and rashly came out of "near zone of" observation, having predicted the heat death the Universe. Spreading the model outside the borders of its work capacity has brought to the steadfast error. The notion, suitable only to molecular systems, was started to use in biology, sociology, economy (in ch.2 this question is analysed in more detail).

The known principle of relativity by Galiley - Einstein, confirms that, being inside insulated from the external world system, it is impossible to present the nature and the motion direction of this system. This means, that no any knowledge, got inwardly a system, do not allow to understand, how they match up with an external world. The experience received "here", can not work "there" N. Bor, feelling this, inveighed for "mad" ideas, which allow to realize the breakout outside the borders of the good sense. But his "mad" model of the atom has an analogue yet (the construction of the solar system). Attempts to overrun the possibilities of the antrop consciousness are illustrated by the situation with baron Myunhgauzen, pulling out himself with his hairs (by his own facility and without external foothold) from a marsh.

The modern model of the birth and extension of the Universe from a certain syngularity (the point with a mass equal to a mass of the Universe) [121] is found on the mathematical linear extrapolation of expanding Universe to the zero time (the beginning of all). This model fell into all exercise books, questions appear, why the beginning must be a point, but not a certain dimensionality. The fact is not checked experimentally, so

must not be a categorical sentence. In works of Demiyanov [65] another (not popular) model of the pulsing Universe is shown, but not from zero to infinitum, but in borders of the certain amounts.

Geneticists, during 2-3 years, cutting mice tails, have noticed, that mice continued being born with tails. From what an output was made, that external influences, influencing upon phenotype, are not inherited, but only changes, happened in sexual hutch are inherited. This sentence logically can not exclude the influence of the ambience on inherited variability of organism, since external factors, acting on organism, can affect on the structure of sexual hutches, because the last make the part of an organism. It is known, that some evolution changies occur during hundred thousands and millions of years. May be, the duration of a genetic experiment was insufficient for such categorical output?

It is known, that behavioural reactions of animals are bolted on the genetic level rather quickly. K. Yung explained the appearance of behaviour patterns (archetyps), hereditary fastening expedient forms of the behaviour [243]. How are they bolted? May be, "genetic dogma" has hampered the development of science?

In geneticist during half a century the dogma dominates, that mutations are casual, they appear spontaneitly and regardless of the organism need. It is possible artificially only to raise their intensivity, but it is impossible to assign them directivity. These statements supported darvimism. But many facts were received of mutation intensification under influence of the stress. D. Keynrs (1988) has shown that not only casual mutations exist, but also adaptive directed. The facts of the inherited adjustment of bacterias, education of genetic systems were discovered. American geneticist R. Harris has realized, that transpositions of moving genom elements are adjusted by their own genetic systems. Transposones appear where it is necessary and need. It is discovered unusual probabilistic accident, but not a strict selfregulation. But these facts were not "be noticed". How a hutch is "clever"? [224].

It is followed to postulate, that any law, any knowledge is impossible to spread further some limit (which is difficult to define theoretically and only an experience shows sustain of some forecasts). This rule is confirmed by unlilierity of the World, illegality of processes, recurrence of phenomenas, so laws, opened in borders of a sertain system, is impossible to spread on everything, make them worldwide (even the law of the gravity by Newton). In persisting monograph invariants of the development are removed from analysis of all evolution periods of the development, i.e. borders of knowledge cover a very broad range, which makes the study unique. But such studies also follows to use with caution.

What is an electric charge, mass, energy? Where do the laws of the nature come from , for instance, the law of the worldwide gravity? Newton, having described interactions of the masses quantitative, has not answered the question, where the attractions come from. Einstein has proclaimed gravitation as an effect of sparkled-pouring space, but why a "crooked" space generates gravitation, there is no answer up to this time.

The construction of an atom by Bor declares the position of an electron on strictly given orbits, but why electron has no place between these orbits, there is no answer . There is something misty, entitled quantum forbiden. The model of an atom allows "перескок" of an electron from an orbit to an orbit, but how it occurs, if an electron has not "the right" to be half way between orbits? To answer these questions it is necessary to come into abovesystem, it follows to allow an existence of more "thing" matter, in which an electron is sunk. D. Bom (a specialist of quantum mechanic) puts forward a suggestion, that an electron "turns round" from a certain more fine matter, then "convolves" in it again, afterwards "turns round" again on the other orbit and etc.

In what ambience does the light spread if it is a wave? They say in the space. So the space can "be agitated". But what is a space and what quantitative characteristics except geometric (extent, curvature) has it?

The more archaic the structure of the World, the deeper they lie in depths of the matter, so it harder to imagine them by the "sane wit", and it happens to build the abstract models, to use a method of the "black" box. It is possible to say the same about a distant future. Our knowledge are limited on the part of infinitely small and on the part of infinitely great values.

Probably, one of the the most fundamental notions are: space, time, gravitation, mass, energy, information. So believs about them are the dimmest. On such "depths" not experimentators go forward already, but theoretics and philosophers, by their own guesswork, giving tasks to practical persons. About transferred problems it is possible to read in section 1.7.

So, in the cognition of the surrounding World myths are continued to be used. The modern myths come in change to ancient myths. The mythological thinking in greater degree is shown at making world outlook models, not checked empirically. The genetic program "believe" goes ahead of, but the program "do not believe" corrects and checks it.

1.6. Global evolucionism - a paradigm of the postunclassical science.

The second by importance paradigm is a global evolucionusm, scientifically - philosophical direction, presenting by itself a system of views on organization and essence of the development of alive and lifeless matter on the Earth, in our galaxy and the Universe. The foundation of aglobal evolucionism mortgaged by Russian cosmists (N.F. Fedorov, A.V. Suhovo-Kobylin, N.A. Umov, K.E. Ciolkovskiy, V.I. Vernadskiy, A.L. Chizhevskiy). For the first time the problem of the wholeness of the World was put by V.I. Vernadskiy in 1910 at the meeting of the science academy in Saint - Petesberg, where scientific bases of holism were found.

The ideas of evolution is possible to meet in works of the ancient thinkers. So, ancient Greec thinker Anaksimandr (6 cent. before BC) toled that a person has derived from other animals, and his ancestors lived in the water and were coverd with scales. Some time later Aristotel (4 cent. BC) marked that, accidentally appeared in animals useful signs are saved by nature, since it does these animals more viable, but their congeners, without such signs, destroy (Darvin came to similar outputs much later).

Aristotel has formed a "stairway of creatures", having disposed organisms in order of the growth of their difficulties. It was begun with stones (lifeless) and ended with a person (alive). From these presentations follows that in deep antiquity a human thought intuitively caught the united the inicial base of the lifeless and alive matter, generality of the whole, an idea of the development. It was a minority of thinkersevolucionists, but the majority of people considered the world stationary since the moment of its creation.

Only on border of the 18-19 cent. in a science a trend to consider not a condition, but a formation of the world was marked. Kant created a model of the birth of the Solar system, which developed on a scheme of the complication from the dust nebula to the Sun and planets (the hypothesis of Kant - Laplas). In 1809 Zh. Lamark had voiced an idea of variability types of living beings, which Ch. Darvin (1859) had developed into a mechanism of the evolution. The evolution presents not simply a fact of variability of

the world ("All flows, all changes"), but the fact of a directed variability. The idea of the directed evolution is brought forth in 1850. D. Dana (an American geologist and biologist). The ideas of the development have found a reflaction in phylosopy of Gegel (the beginning of the 19 cent.), in which evolution of the material world realizes, as a development of a certain absolute idea.

In the Bible the creation (the development) of the World also occurs under an influence of the highest reason (the ideas) from simple to complex. In the Bible scenary the first 6 days of the creation were realized on the scheme of the complication. However evolution of a person is absent according to this model. A person is created on the "image and resemblance" of a modern type (homo sapience). No signs of "caveness", wildness, evolution are absent which disagrees with the archeology.

The classical thermodynamics (L. Bolicman), coming from an effect of the second law, told about the variability of the world, but only to the side of a degradation, a growing of the disorder, a chaos (the growing of entropy). Fallaciousness of this forecast (as it turned out to be in consequence) is found on use of a too simple model (the ideal gas, isolated systems) for the description of supercomplicated systems.

The 20 century is noted by a breaking of the World mechanical system, confession of evolucionism ideas and proclamation of the global evolucionism paradigm. The physicist Shryodinger (1944) comes to the conclusion, that except a mastery of entropy (the chaos) there is an inverse process of order in in the living nature. There were open self-organizing processes in the lifeless nature too. In the chemistry spontaneous fluctuations of the chemical condition of the ambience (the reaction Belousov - Zhabotinsky) [75] have become known. Prigozhin I. researches the processes of selforganization in the open, dispattive systems and develops the thermodynamics of the nonlinear ambiences, in which positive feedbacks bring about to the growing of "order" of a lumpy ambience (the generation of the difficulty). There was open, that chaotic, convective, heat flows under the determined conditions can become ranked. In a layer of the liquid, warmed "on a pan", under determined conditions the gecsonic structures of the correct form (cells of Bernar) appeared. All possible curls, tornado in the atmosphere and the gidrospere of the Earth also demonstrate possiblities of selforganization. Unreversible of the majority of the known processes is installed. Instead of the endless, stationary at time and in space Universe, the model of the developing Universe appeared, within the frames of which the stars and the galaxies forming were open.

Presently all agree that a source condition of the Universe was simple and less odered, but presently the process of a complication is observed. (This opinion is refused in chapter 2.1). Does the limit of a complication exist? Does the limit of the socium, planets, galaxsy, the Universe development exist? Does the end of the evolution exist? Our consciousness does not want agree with the end and it is already made a model of the pulsing Universe, including two variants of the development (motion from an order to a chaos in a stage of the compression, and from the chaos to the order in stage of the extension) [73, 65].

The public interest to the problems of the development is increased. This has felt in the first place those, who by the sort of their activity face with the problems of wholeness: biologists, philosofas, ecologists, sociologists. The Cybernetics integrated under the aegis of control biological, social and mechanical systems, and has shown that laws of control in miscellaneous systems have much similar.

The principle of historism (evolucionism), mortgaged in dialectics, wide-spread on the whole Universe [178, 104]. We came to the understanding, that a variability is observed all over from elementary particles to cosmic objects. The historical aspect of any science all more is moved on foreground, for instance, evolution chemistry (historism in chemistry) is formed. The questions about an evolution of time and space and even about correctness of the notion "the world constant" are put. The concept of the global evolucionism helps to see the total conformity of the lifeless, alive and social development. For instance, a brain is not only in persons, but it is in animals, birds, fish. The phychic of a person has grown from the phychic of animals [74]. In the present moment at the end of this very long evolution chain of the life on the Earth a person stands. What will be in further? From this understanding the lifestyle, economy, and policy depend.

In literature there is an opinion that a system approach is more directed on statics, than on dynamic, but ideas of evolutionism are also introduced in the system approach. The system glance recomends to value the purposes of any human activity by a glance from the uppersystem, from the surrounding, from the past and the future. So rules of the good tone imply the account not only own interest, but also surrounding people. The strategy of the business must take into account as the interests of a market so as the interests of the socium. The mankind will not long exsist if it ignore the "interests" of the biosphere.

Paradigms of the wholeness and the global evolucionism must become the worldoutlook, around which the system of life, individual, and socium will be formed. The worldoutlook always defined the people's behaviour. For instance, a sensation of time-waits existence gives bith the strategy "after me may be a flood". But awe of the punishment for sins after life can stop a criminal.

A global evolucionism implies historical intercoupling of the different difficulty systems and explains the genesis of the new structures. Such "syntetic" surges reveal in miscellaneous science. Biologists want to build the holistic theoretical biology. Mathematicians want to build the building of mathematics on the united base theory of sets. Physicists want to create the united theory of a field, presenting by itself the theory of all intercoupling. The direction "evolution cybernetics" (Rediko) appeared. And in a limit modern scientists want, as their ancient predecessors, to create the model "of general".

The incidence of possible greater variety of the polyhedral world requires very broad knowledge in the field of physics, chemistry, biology, natural sciense, sociology, management, system analysis. A narrow specialization of scientists creates a barrier for mutual understanding, limits the vision of the World, does not allow to forecast the future. Evolucionism refuses the known term of marxism about "supernaturality" of a person, that ostensibly does not allow to use the laws of the nature to public systems.

Between laws of simple and complex systems there is no resistless galley proof. The appearance of new levels of the world organization generates new laws. Laws evolutionise, either as the nature does, but a resemblance between all laws is saved that allows to use the laws of simple systems to social systems, but with a certain adjustment. The absence of the adjustment often brought to errors. As an example can serve the wrong forecast of the heat death of the Universe, outgoing from a classical thermodynamics.

The contrapositions of the type: a person - a nature, an instinct - a reason, natural - artificial, alive - lifeless are not absolute now. The system look at different, complex objects has seen in them much total. Artificial was accepted to consider the products of a person activity, but what created by nature, was considered natural. Here it is conducted notallowed

contraposition of the type a person - a nature. However the nature, and a person are complex objects. Activity of the person is possible to describe as activity of the natural subsystem. "A person emerges and as a subject, and as an object of the nature activity" [198, 199].

For instance, a bird builds a nest. The nest is an artificial construction with a standpoint of the bird. With a standpoint of a person the nest presents itself a natural building.

With this view technosphere (the product of mankind activity, providing an excistense of society) is a subsystem of society, so it follows to acknowledge it as the composition part of an alive system. In analogy, as a part of a person confess the prosthetic devices, artificial valves heart, joints, containers and etc. Human society is induced by biosphere, so it is a part of biosphere. Thereby, paradigm of the global evolutionism brings about the thought that technosphere is induced by biosphere (as a plant is generated by a trip). This changes the standpoint on relations of technosphere and biosphere.

Conclusion.

1. Philosophy of Geraklit has generated the paradigm of the global evolutionism.

2. Each phenomena must have a preceding event.

3. The development is possible to consider as an evolution row of events.

4. Stacionarity, constant are abstract notions, having no a real fill-thread.

1.7. The space, time and variability.

Notions "evolution, development, organization, time" are closely associated with motion, actions of processes, and a process is not imaginative outside of time [13]. Deep understanding of the evolution is impossible without beliefs about the nature of time. The most interesting from the ancient beliefs about time is possible to find at Platon and Aristotel. According to Platon the time is created byndemiurg together with cosmos, is in motion of celestial bodies and is obey the law of the number ("Timey"). According to Aristotel the time is also connected with the motion, but is not the motion. "The time is the number of the motion" ("Physics" IV). In modern terms this thought follows to understand so. The time appeared together with the World and is a facility of the cognition (the number) of the motion. This belief about the time was revived in works of Vernadsky and his followers in the 20 century.

Augustine (354-430 years) considered, that before creation of the world there was not no any time. The time in itself is possible to consider as the beginning of the all current. Augustine rejects the possibility of identification of the time with the moving of the physical world (the Creation). He searches for the measure of the time and the way of its measurement in the individual soul of the subject, a watcher (from the modern standpoint time is a subjective notion).

On the opposite Plotin considered the time absolute, not depending upon a watcher, and separated the question about the nature of time from the problem of its measurement ("Enneads"). In the 16 century presentations of Plotin were prescribed in the base of the absolute time of Newton and today remain in everyday life of the graet amount of people.

Classical mechanics, continuing the idea of Plotin, declares the absolutity of time and its divine origin [5]. On Newton the time always was, the moving of time is equal in the past, the present and the future in any parts of the Universe and it is impossible to influence upon it. Time of Newton is absolutely and universal. In all parts of the Universe it goes equally, from the past to the future. In times of Newton the Universe was considered stationary, not developing, so the absolute time was charaterized by the process of the development of the whole Universe, but was characterized by the motion of some equal processes (the hours). In mechanical of Newton the time is reversible, it is enough only to change the sign in the equation from the plus to the minus. In buddhism it is also expected, that the vector of time sometimes can be directed from the future in to the past.

People have no doubt in the time existence. All understand that an image of the clock - not the time. The clock is possible to stop, to move the hands, but time does not stop, it is only felt by an individ. For organs of feeling it is not available and in consciousness it has not the corresponding image. All that intuitivly is felt, but has no an image (as emotions), sooner is found in the subconscious.

The feeling of time is present in complex animals and greatly more developing in a person. A person have translated this feeling from the

subconscious into consciousness, having created clockworks, made metric of the time measurement.

The time is measured by watch, and the following current processes are used for that: the motion of the Sun, a water, sand, mechanical watch. For this in consciousness is produced with-delivering the observed process with the master, even process (hours). All "even" clocks exist objective outside of consciousnesses and are thinked by a consciousness for the convenience, for formalization the sensation of time by numbers. But originally the time was felt under-conciously by means of internal, uneven biological hours. This mechanism continues "to work" and at presence of formal external sentry device. Le us recall the sentence: "Ah, how long the waiting is".

People placed in deep caves, deprived any information relationship with the world, continued to feel the day allowance cycles of the time moving, though internal time did not comply with the solar time. The biological watch works also during the dreams (it is possible "to book" time of getting up). But biological watch is nonlinear. In the youth it "runs fast", all remember how long it happens to wait for maturity and everything is still ahead. This sensation is connected with the "quick moving" of the internal clock, so all external processes seem decelerated. In old age an internal watch slowed and comparatively them all external processes seem quicker.

Any watch are processes or periodic (the pendulums), or inconvertible ("river of time"). Absolutely even processes is not in the nature. All stationary watch seem such because of the processes of the observations are terminated before the observable changes will occur in hours.

STR as the most exact clock uses the moving of the light, expecting, that the velocity of the light is constant (the postulate of Einstein). It is possible without any reason expect, that the light watch also are not "exact". If the light - a wave in the space, so the space in the expanding Universe must change its structure and characteristics. Following the change of the ambience, a wave (the light) must change the velocity of its spreading. Radiofizik Demiyanov in his capital work "Evalektika of noosphere" [65] persuasively proves, that the velocity of the light can greatly exceed now measured one. It is known that, spreading on the space of (material, nonlinear ambience), in different its areas the light spreads with the different velocity. For instance, velocity of the light in the glass is low the velocity of the light in vacuum. Taking into account beliefs about

the nonliniernce of the world ambiences, it is possible to expect, that vacuum is also heterogeneous so the velocity of the light in vacuum must be variable. Thereby, the light watch of Einstein can not serve as the standard of time.

The absolute ecumenical time must be assigned by the standard process for all parts of the VUniverse. But a consciousness of a person is not capable to cover such scales, to explicite a certain Ecumenical standard process. That is why it happens to be limited only by local time, local process. As a standard of the local process the watch, going on terrestrial time is taken. In the classical mechanics this watch mentally is put on all observed objects. The human thought artificially standardized the moving of all master clocks, having named this human standard as the absolute time (and believe in its real existence).Till the present moment all reference clocks were based on processes of mechanical movings (in STR the light, photons move). Even caesium clock (fluctuations of electrons in an atom of caesium) are based on movings of electrons. Even processes in the nature are exclusively a little, but why as the standard the exclusion is accepted ? (It is obvious easier).

Einstein has found out, that the moving of observable clock can bring errors in the measure of time. The faster the moving is, the more the error is. The faster "that object" moves, the slower the processes proceed in it, i.e. the slower the time goes in it. Such interpretation of conclusions of STR can be met in many textbooks [21, 29, 113]. However always is underlined, that the observer on "that object" will not notice any changes in the course of time. If opinions of two subjects do not coincide, it is necessary to search for the reason of such discrepancy.

Let's try to show, that time delay in STR is a result of events reflexion in "a curve mirror" of the observer (hallucination) consciousness. If to agree with a myth about an objective (not seeming) delay course of time, thus there will be many contradictions, let us consider them.

Three identical subjects A, B, C settle down nearby/ Subject A has started to move to the left concerning the subject B. Simalteniasly with it with the same speed the subject C began to move. According to STR a subject B will move observe the delay of a course of a clock (processes) nearby A, i.e. A will grow old slower, than B. The subject C moves aside from A, therefore removal from A occurs twice faster, than from B. In this connection with it C will observe more time delay nearby A, than B considers. It happens, that the subject A must grow old simultaneously with

two different speeds, this is an absurd. It follows, time delay at increase of the speed of movement is seeming. The reason is covered in finiteness of the light velocity. If the information extended immediately, the effect of delay of a course of time would disappear.

Dependence of an estimation of a course of time on gauges of speed measure information is obvious. As the light information channel is consideredt the "fastest" till now (the fact is taken on trust) to make more exact measurements is impossible, therefore people have to accept indications of the light clock as true. But it is possible to put a mental experiment (by the way, all Einstein's conclusions are constructed on mental experiments).

If objects move in the dense environment, where the speed of the light distribution of the light lower, than in vacuum, seeming a delay course of hours on "that object" will be much more. It turns out, that the course of the time of light hours depends also on properties of the environment. If it will be proved, that the speed of the light (or other carrier of the information) can exceed 300 thousand km in an hour, so the opinion about a course of the clock "on that object" will change. It will seem, that it began to go faster. So, a relativity of the time rate is connected with the imperfection of a measurement system, ignorirovani of heterogeneity of vacuum and a presence of of the supervision subject. Let us strengthen the prove system, having spent the following reasonings.

In the Universe all objects move relativly each other, so the course of time in them is different. If, agree with STR, the Universe is a spatially - a time conglomerate of inertial systems, where there is no uniform metrics of space, time, and it is impossible to describe the Universe by means of uniform system of coordinates.

It is considered to be, that the Universe is a uniform developing system, hence, for integrity of the preservation, the development of its parts should occur coherently. Hubble asserted, that the further from us other galaxies, the faster they run up, hence, on STR their internal time goes slower ours. If it was always so, we are senior on age, than distant galaxies. If our age is senior, the Universe birth was stage-by-stage. At first we appeared, and then "distant galaxies" did. All that would can be discussed. But the opinion of "that", the distant observer will be antithetically to ours. Therefore, what point of view to discuss?

A standard model of the Universe development will not always be coordinated with GTR (the general theory of relativity). According to the standard model it is considered to be, that the microcosm was generated during 5 minutes ("on Moscow time"?), and all other events last billions years. This opinion is not coordinated with GTR, because agree with GTR, the time course is strongly slowed down in the strong field of gravitation, close very massive ojects (for example, black holes). In an initial stage of broadening the Universe was similar to a black hole, and the time course should be very much slow in comparison with the standard (terrestrial year). In a "standard model" it is not taken into consideration, therefore the estimation of the development rate in minutes is incorrect. Connection with this, it follows to revise a time evolvent of the Universe development and birth.

So, the light hours creates an illusion of a course of time change and a deformation of the space. In ideal Einstein's mental experiments the property of the environment are not considered. Some abstract space in which the light extends and two abstract "observers" move with clocks is an environment. Observers are deprived all human abilities, but possess fantastic possibilities to see on different distances, to fix supershort intervals of time. According to STR relative movings of observers should influence on a course of "those" hours. Let us analyse this possibility.

Light from distant galaxies goes to us billions years and bears the information about their condition, which is in the long past. The observer on the Earth simultaneously can observe the present (for the Earth) and last events (from space). But this combination of the past and the present is not connected causally - investigatory communications. It is possible to see the past, but it is impossible to influence on it. Also it is possible to see a film about last events, but can not influence on them.

If the observer on the Earth makes maneuvers with a purpose to affect on a course of "those" clock. His maneuvers become known on "those" objects through billions years. By this time "those objects" can already disappear (die). However, as it will be shown below, actions of the watcher can sometimes change a speed of the events' current in the observable object, but on causes not connected with STR.

STR though also relativistic, but nevertheless is a mechanics. The mechanics studies only one form of the moving, namely, the moving in the space of the Dekart coordinates system. STR does not consider the movement of a matter in the form of phase and structural changes. But philosophical representation about the movement provides not only the moving on coordinate axes, but also an evolution, a change of the objects'

structure. Einstein considered only the stationary Universe, the idea about its expansion (A.Fridman) has arisen only after publication STR.

It is necessary to notice, that STR refuses from the absolute, world time of classical mechanics. For the first time the time becomes local, relativistic. It was a revolution in a science thinking. A readout of the local time is made by a course of the local process moving. In STR such processes - hours are only movings. Presently other concepts of the local time measured by processes of structural changes appeared. Let us consider them.

In first half of the twentieth century in V.I.Vernadsky's works [42] thoughts about time, as about current of biological processes appeared. "Caducity of a life is worried by us as the time". Above it was already noticed, that Vernadsky's approach is coordinated with the point of view of Aristotel and Augustin, but tears away the mystical relation to time and brings to the thought about the time connection with real processes.

Long before Vernadsky an attempt to explain the time course was undertaken by L. Boltsmanom. A time arrow was explained by processes of entropy increase, which are shown as the structural transformations, directed to chaos. Boltzman felt time as a current of the process (though destructive). In his opinion, all isolated systems (and the Universe without a substantiation is considered as the isolated object) develop in a direction of the entropy growth, disorder growth. Prigozhin I. (a middle of the 20 century), coordinating with Boltzman, develops a concept of the internal time of irreversible processes, in which the system rolls down to chaos (entropy growth) [178, 179, 180]. But Prigozhin does not extend entropy growth to all the Universe any more. Representations of Boltzman -Prigozhin do not contradict the above stated concept of the local, internal time, but prompt an idea of sinergetic time, though sinergetic time concept is based on processes opposite the entropy.

The whole Universe contrary to the theory of the "thermal death" shows aggregation processes of a substance. This fact has generated a sinergetic sight on the time, as the sequence of new elements appearing. Intuitively just so we feel a time movement. A person has never been in conditions, when all kinds of a movement stopped (the time stopped). The stop of all kinds of a movement is equivalent to the death. In frameworks of sinergetic paradigm the time ceases to be absolute, and is the characteristic of the system internal processes course. Each system has its internal time, characterised by processes of structurization (ecstatic time) [5, 118].

Developing a sinergetic concept of time, Levich A.P. suggests to enter the meaning of substiticion time, quantum of which is definded by the change of any system element [122]. For example, a process of synthesis of new cages in an organism can be analogue of internal hours. Occurrence of each new cage is similarly to a "step" (a second) of internal hours. Biospheric time is counted by occurrence of new kinds of live organisms etc. There is a hierarchy of hours for systems of various coordinating.

T. P. Lolaev formulates a concept "functional time" which is a subjektiv perception of "qualitative changes" processes, occurring in material objects. Functional time has the beginning (object formation) and the end (object destruction) [124].

In the east doctrines there are strange, exotic representations about time. For instance, there are representations about a convergence and time divergence. These representations do not put with representations about the absolute time, but easily are explained by the concept of functional time. The concept of functional time, and synergetic concepts can explain, how such exotic representations appeared.

For example, a branch of a fragment from the whole (political party split, population migration of Europe to America, iceberg disintegration on pieces) gives a start to the new process, a new cycle of internal time. In these examples we have the divergence phenomenon (divergention) of time.

New structures can arise also by a combination of former (a synthesis of molecules from atoms, a formation of organisms colonies, a congress of different parties representatives). The synthesis of a new structure is carried out from fragments, each of which was characterised by its internal time. At synthesis of the new structure from two "old" reading of the new integral time begins. Here there is a phenomenon of a convergence of time.

The stated concepts of internal, local time are still far from the end. These models still are at subconsciousness level. Time should have a quantitative measurement. However it is not clear what "steps" it is necessary to consider as a course of internal time. Individual sensations of time are very changeable. All systems of organisms have a hierarchical structure. Their rhythm of life is distinguished. In a cell the basic processes are concentrated round synthesis of fibers. There are cell fission cycles. In an organism frequency of cells change, rhythms of heart work, breath, brain can argue for the right to be considered as hours. In the basis of all atoms (practically not changing elements) "lay". Further molecules, cells, fabrics, organs, organisms etc. Each level has its own time of development, its rate of change.

At the end of the 20 century transition to nonlinear thermodynamics, nonlinear thinking was outlined. It is possible to assume, that the similar should occur to the time metrics too. An epoch of nonlinear time, nonlinear hours is going. There were representations about internal (nonlinear time). According to the "standard" model the Universe develops non-uniformly too. Summing up, it is possible to draw a conclusion, that the concept of time is in a chaos condition (there are no definition couples, there is no uniform metrics, a subjective dim image in the consciousness). A current of the local time is at the level of vague, intuitive sensation, since there is no uniform standards of processes.

In complicated systems there is neither beginning no the end. They are smoothly transformed into each other, so it is not clear from what it is necessary to reckon time. How to differentiate in continuous evolutional chain of events "the end of a monkey and the beginning of a person"? If the Earth arose during the long process of a condensation gas-dust cloud, from what moment it is necessary to begin account the terrestrial time?

The synergetrics, finding out invariant mechanisms of self-organising of miscellaneous levels of complexity systems, different age, requires the concept of local, internal time. In-tuitivno it seems, that processes of life cycle of a fly and an elephant have much in common (a birth, training, functioning, reproduction, death), but on absolute time they strongly differ with duration.

Development of a female organism proceeds faster, than man's, therefore at the introduction into marriage on customs a man should be senior a woman on the absolute hours, but according to internal hours their age should be identical. However for calibration of internal biological clock it is required to find some standard of the development (it is a synergetrics problem). Without the solving of this problem, the concept of the internal time remains in the hypothesis status. Just the mankind cannot do without reference, uniform clock.

Unlike the absolute time all concepts of the local, synergetic time consider impossible a turn of a course of time back. In the subconsciousness time also is felt single-leanered. One step of the local time is an occurrence of new (other) information, new structure. "Other" information appears both at synthesis, and at disintegration of former structures, therefore time movement always occurs from the past to the future. For example, in a sand-glass time can be counted both on a growing small group of sand, and on the decreasing.

Negation of the possibility of travel to the past in the West science is put in a known paradokse. If the traveller in the past at a meeting with the still the young his grandfather made hin sure not to marry (will destroy the reason of his appearence in the world), should disappear the traveler himself (consequence). Obviously, a travelling to the past can causally break the reason-consequence communications, therefore it is impossible.

In concepts of synergetic time one more not noticed possibility is put. Unlike STR, actions of the observer can really affect a course of internal time of the object. It is possible to "kill" an object, i.e. to stop its internal time. It is possible to accelerate or hesitat the rate of a development. Changing light exposure of a plant it is possible to accelerate a course of its internal time in order to remove two crops yearly.

The sensation of time and space is based on the ability to remember, and to compare different images. Without these sensations time will disappear. When we consider a number of events, it is necessary to store images in a memory in the correct sequence. To estimate a rate, a speed, a rhythm of events it is necessary to compare them with some standard (hours). Storing and comparison of two numbers of events gives a subjective sensation of time. Time "is born" in the consciousness, as a feeling of analytical activity of a brain. The past really does not exist, but can be stored in a memory.

The future is the project, which is contained only in a memory of consciousness (databank). The subjective future has an information basis, as a result of an extrapolation from the past. The image of the future at first arises in the consciousness and can long be stored in a memory, for comparison with results of the forecast.

The "present" is defined by duration of acceptance processes, processing of the information, loading it in the "database" and comparison with that there is already available. The present is not an instant, but an interval, defined by possibilities of information systems of an organism. The present is always accepted in the comparison with the past. Therefore the present is a perception of the cumulative information stored in memory, plus the operative information, arriving now. The presenty cannot be comprehended without a comparison with the memory of last events. One word in the text is not meaningful in a separation from a context. Thus, the moment "now" is not simple a point, but a point added to a piece of memory of the past time. The past, the present, the future is a result of the memory function. So, the memory role in the perception of time is shown.

A memory represents the phenomenon of the information nature. The information can not only is transferred from one carrier on another, but also remain on these carriers. Information preservation is a memory function.

The peculiarity of the time perception is not a simple memory, but a memory - the qualifier, ranging events on first come. In simple (static) systems information fragments are embodied repeatedly in the same block of memory. For example, it is possible severasl times to photograph on one shot of a film. On a roadway traces of many people are printed. Such storing creates the informational noise, one image "hammers" another, old is erased. Inspectors - criminalists know, how it is difficult to "read" crime traces thus.

If to carry out storing on different sites of the material carrier, as in a film, a possibility to manipulate all information lost-free appears. DNA and brain structures posess such memory.

Memory is not only the biological phenomenon. It is possible to find out it even in complicated f objects of lifeless nature. For example, it is known the geological annals fixed on ground sieges of rocks and minerals. Sedimentation process is developed in time, therefore new events are always fixed on the new carrier (as in the cinema). The sequence of adjournment levels of rocks represents the memory about last geological events, but not fixed by the consciousness on time.

Detection of monotonous processes of radioactive disintegration of elements, allows to use these processes as clock. Light, going from far galaxies, allows to learn much about a condition of the Universe of the past millions years. Human memory, obviously, is capable skan events in any sequence.

Considering all stated above, we will carry out the analysis of mechanisms of the space perception. We will observe the movement of a clock hand (uniform, reference process of space changes, characterising time). The course of the hand is perceived as a moving in the space. In this simple supervision the connection of time and space mathematically issued into STR is already seen. However long before Einstein the space was measured by the time. For example, it was informed: "Till the end of a way it is necessary to ride a day on a horse". Light year corresponds to a way which a ray of the light passes during a year.

A space in the classical mechanics is independent from things and processes. It is possible to remove everything, but the space thus remains. The space is not connected with the time. The space exists out of time, and time - out of space. It is possible to measure the space by three-measured Dekart system of coordinates, image of which exists only in the consciousness, there are no coordinates in reality. Other image of the space without system of coordinates in the classical mechanics does not exist.

So, the absolute space is a strongly simplified model of the reality, which can be used for the description of simple mechanical movements with enough slow speeds. But the human consciousness long identified a subjective image of the "absolute" space with the reality (again hallucinations).

If the object is investigated, which does not change in time, but is extensive in the space, so for its perception a memory and an ability to compare images is also required. During a map making separate sites of territory are investigated for years. Studied separate fragments are stored in a memory (reports, books, drawings). These fragments are joined, developed in something whole. Even when we consider a portrait an eye in parts skans the image, remembers fragments and synthesises an image in the consciousness. Thus, the studying of a static object is developed in time, as well as the dynamical object. To apprehend the space, it is necessary to scan by attention separate parts of an object, to remember, to compare, to build a model. The space is a subjective image of the being, but is not the being. Really there are structures located "one near to another". The size of structures (a space), arises in the consciousness at comparison with some reference, virtual structure (a system of coordinates). The consciousness must remember two objects and compare them in order a sensation of space, dimension appeares. The perception of the space is formalized - by the metrics (metre). Before the invention of metre for formalisation of of space feeling the proportions of a human body (foot, a span, sazhen, etc.) served.

It is possible to illustrate the stated information by a following example. In order to observe the train of kilometer length, the observer should move along it. To present it entirely, it is necessary to remember the last supervisions. It is possible to change the scheme of supervision and to force a train move by the observer. **But in any case the spatial image of**

an object can be received only in movement and in the presence of the memory.

To perceive spatial movings of an observable object (moving) it is necessary to use a memory of the last place of the observable object. In order that the moving of an object from a point A into B becomes appreciable, a position of the object in a point A should be remembered and compared with the position in a point B.

A speed of moving is perceived by the consciousness with the use of existential correlations. If the sensation of time or space is lost, to estimate a speed of an object movings is impossible.

So, the majority of objective processes in the Universe proceed irrespective of the consciousness. The consciousness of the person through work can sometimes generate technogenic processes in the Universe. **Time and space as tools of knowledge of processes, have appeared together with the consciousness and a memory.** Usually such informative systems identify with a person, but animals also are guided in space and time.

Subjectivity of the time sensation depends not only on the processes proceeding in the consciousness, but also from a quality of sensor controls, gauges and the information channels connecting the consciousness with a reality of the being. Limitation of the speed destribution of the information by means of the light has generated the special theory of a relativity (STR).

So, in modern representations time has ceased to be absolute, uniform, unbroken. Many new definitions, meanings, terms appeared. Time turns out to be a consequence of the observer subjective experiences and way of the development reflexion. The mechanism of the time experience "is sewn up" in a genetic memory.

Conclusion.

1. In modern representations time has ceased to be absolute, uniform, unbroken. Time is a version of subjective experiences of the consciousness.

2. Time and space as tools of processes knowlege, have appeared together with the consciousness and a memory.

3. The sensation of time and space is based on the ability to remember and compare different images.

4. The changes occurring in an objective reality, are modelled in the consciousness by means which is accepted to name "time current".

1.8. Heterogeneity of a matter - an information substratum of time and space.

As fundamental things of the world people interpret the weight, the energy, the space, the time, the information [1, 2]. Till now there is no the clearness, what of the listed concepts is primary and what derivative of it. Representations of ancient philosophers about the World fundamental principles [19, 272] are above short stated.
Before the beginning of the XX-th century in a classical science existence of the absolute space, on the "scene" of which all events were priori supposed. The absolute space does not depend on the processes proceeding on its background. Processes arise, disappear, but the space is invariable. An image of the absolute space has arisen from mechanical, very simple representations about the World. It is possible to present the space as an analogue of a room – laboratory, where mechanical experiences are carried out. Experience has finished, a requisite have carried away on a and the laboratory remained invariable. warehouse. But thin measurements could show, that the laboratory influences carrying out of experiences, and experiences also change the laboratory condition.

Time was considered as some absolute fundamental principle of the World (Newton) [5]. Einstein in the special theory of relativities (STR), having united time and space, weight and energy, inertial and gravitational weights, has loosened a classical paradigm and has continued tendensy of isolated concepts integration, quantity reduction of things and searching of fundamental principles of the World. Einstein's space became inseparable from a matter, time and energy [241], the space had a new metrics - curvature. Space and time became quantum [171] and "derivative from being" (M.Heidegger). The space consists of "things", and things represent in a special way an organised space. With the changing of things the space changes. The world began to be perceived uniform, but discrete. If the World is perceived discrete, hence, non-uniform, as a matter of fact. **So, heterogeneities are by themselves attributes of the matter, the space, the time, the energy, the order, the chaos.**

Infinite uniformity, for the hypothetical observer does not carry information and makes impossible of the observer presence, since an inclusion of the observer in the homogeneous World is already the heterogeneity. If the World is observable, hence, it is non-uniform.

So, in the base of the World cognoscibility heterogeneities lay. Cognoscibility always assosiates with information, this means, that concepts "information" and "heterogeneity" are connected with each other. Heterogeneities represent an information source. Information is a subjective image (a model) of heterogeneties. Depending on professional interests many researchers represent information in their own way. Let us show their points of view with our comments in brackets.

Rebane A.K. [184] and Veitzsaker defined the information as a form (A form can be identified as the heterogeneity of a separate object surface

curvature). It is enough to imagine a work of the sculptor to agree with their opinion.They also consider as the specific expression of the information the weight and the energy.

Cybernitician U.R.Eshbi [240] interpreted the information as a transferred variety (a variety - a heterogeneity synonym). As a variety it was understood a set of different elements, communications, relations of objects properties. The information concept as a variety, cybernetics V.M.Glushkov [55], B.N.Petrov, S.Bir, philosophers I.Zeman [80], K.E.Morozov, V.S.Tjuhin [208] also developed. According to Ursula [214], the information is a reflected variety (the reflexion of heterogeneties on other material carriers).

"Attributists" qualify the information as an attribute of any material object and estimate the information as a measure of an orderliness of structures and interactions. Heterogeneities are an attribute of any cognizable object.

Other, ideal part of the information can migrate, change the carrier, but nevertheless all remains "adhered" to a matter in a form of heterogeneties. There is no doubt, that all types of information "are shown as heterogeneities of space, time, energy and substance". Academician V. M. Glushkov is right in this[55], though to explain one uncertain concept (information) by the set of other uncertain concepts (time, the space, weight, energy) is not quite correct.

A.A.Petrushenko's [169] point of view, can be is short shown to the following. A distinguish nature sign is "a distinction". The information is connected with a reflexion, a variarty, a definiteness. The information is the staticized organisation, and an organisation is the fallen asleep information. The information is contained in a system, the information in itself is a system. Any subject is the substantiated information. The information exists so far as as there are material bodies and, hence, heterogeneities created by them [169].

There is a gnoseological and an ontological aspect of the information. An ontological information - a transcendental object. The gnoseological information is a reflexion of "ontological" in the consciousness of the observer. But also in a case of reflexion on any material carrier the information is shown, as alternation in time and in space of a different sort of heterogeneties: consolidations, stains, strips, layers, roughnesses, magnetisations, presence of charges, etc. It is impossible to present information without heterogeneities of a material carrier. It is obvious, that the same concept "information" of adjacent, specialised sciences has received a different name. Thus each author of the term puts in it "his own" sense, considering different heterogeneities.

With the appearence of the observer the operative information began to be subdivided into the helpful information and useless. The helpful information, functioning in a human system, have named functional [1]. This information is studied by "functionalists". In our opinion a dispute between functionalists and attributists about the nature of the information has not a principal sense, since the first study and use in the practical purposes a top of an iceberg (the functional, subjective information). Attributists see also this top, and an underwater part of an iceberg (the attributive information). Here we again meet with a necessity to distinguish subjective and objective to avoid substitution of these concepts (hallucinations).

The cybernetics has expanded an area of the information applicability out of limits of human functions, having shown, that management laws in biological systems are very similar with a function of automatic machines created by a person [44, 45]. Further the term information was used by biologists studying a heredity and mechanisms of the management in live systems. Genetics freely operates with such concepts, as: a genetic information, a genetic code, a molecular carrier of the genetic information (DNK) [22, 76, 203].

The investigated situation shows an evolution of the concept "information", that is natural from positions of the global evolucionism. During an evolution not only nature laws change, but also subjective representations of them (evolution of models) do.

In our opinion, an attributive information is a display of heterogeneities of the material World in a statics and dynamics. A matter and its heterogeneities are inseparable.

A functional information is a reflexion of the attributive information in the consciousness. It appeared simultaneously with the consciousness. A matter evolution is estimated by the consciousness through an evolution of heterogeneties. Having begun with a combination of an attributive information, evolution has come to a combination of a functional information (brain function) and, as a consequence, to an advancing reflexion. A complication of the world during an evolution has led to an object specialisation on transmitters, receivers and data carriers. Objects synthesizers of the new (a brain, the computer) appeared. In living systems information has got an alarm form and new possibilities for combination theory.

The information is closely connected with the space. The space is a set of material things. Material particles, settling nearby, form the space. Also as in geo-metry a point near another point, the sequence of points gives a line. A line near a line, turns into a plane etc. Any three-dimensional figure, combined from points, is a part of the space. The space is the generalised image of infinite quantity of figures. The space is discrete, non-uniform, therefore informatively. In our consciousness the system of heterogeneties of a material world is perceived as an image. But the matter of nature remains not clear. Any changes of the space structure are information changes. Occurrence of one structure after another, one event after another is subjectively perceived as a movement, a process. The consciousness fixes process of the "other" information occurrence, as the time. "Other" information is identified only in a comparison with the previous information. The direction of a change has no value. A change is a scalar. For example, reference time is counted by a pendulum clock, where is no a constant trend, but there is a constant "other". A movement to the right is replaced by a movement to the left, one replaces another. Synthesis of the structure or disintegration of the structure by the consciousness is estimated unequivocally as a time current. Turns of the Earth around the Sun do not give novelty, but mark periodic occurrence of "another". Now it is clear, why time cannot "go back". The variability perceived as time, is a scalar. Time "step" is comparable to an occurrence of a complex of other heterogeneties.

As we see, the concept of heterigeneties bears in itself a powerful heuristic potential, not only pawns the information in fundamental bases of the World as the space, the energy, the weight do, but also opens the information nature.

So, we have defined the information as adisplay of various heterogeneties of the material-discrete space. An evolution represents a process of the direct space structurizations. The evolution of heterogeneties is an evolution of the attributive information.

Scanning by an attention (the movement form) of heterogeneties of a material world at the comparison with the metrics (a coordinate grid) is worried by the consciousness as the space.

The space, the time and the movement are different forms of attributive information perception. Therefore Einstein is right, who has noticed their close interrelation. However it did not discuss the sort of this communication. To us it is clear, that the general root of space and time are heterogeneties.

Dynamics of heterogeneties is time. The vector component of heterogeneities variability is felt as a movement, a moving, an evolution. The scalar component of heterogeneities change is worried as time. "Statics" of heterogeneties represents structures, space, things, objects and so forth. A division of heterogeneties on static and dynamic is conditional. For example, attractor is a unity of a statics and dynamics. So, it managed to us by means of the attributive information concept to turn the time in a rank of the secondary, subjective receptions, which are giving the chance to the consciousness to estimate a chain of events. To three spatial measurements the nonlinear coordinate axis of the attributive information characterising processes of consecutive variability, evolution was added. The axis of the time became a subjective "shade" of an axis of the information, helping to classify numbers of envents, comparing them with any way chosen "reference" number (hours). In each zone of the space (sets of things, elements) a rate of the development differs from rates of the neighbour zones development, differs by a current of the functional time.

Conclusion

1. Heterogeneities are attributesm of being: the matter, the space, the time, the energy and appeared simultaneously with our Universe.

2. Before information occurrence in the consciousness it is necessary to feel heterogeneities of the real world. The functional information is a subjective image (model) of the objective heterogeneties.

3. The attributive information is a set of heterogeneities of an objective reality (the presence of the observer is not necessarily).

2.1. GLOBAL SYNERGETRICS.

On a wave of the global evolutionism ideas a science about selforganising of a matter and evolution mechanisms appeared [99, 100]. Each science describes objects by its own "language". Synergetrics is interested in every development of the nature, it describes evolution in the language, clear to everybody. World outlook consequences synergetic knowledge can be formulated without the use of the mathematical toolkit and the programming language, which makes them convenient for humanists. There was a hope, that superdifficult socionatural environment can be described by a small number of fundamental ideas and images, and then, probably, by the mathematical equations.

In the second half of the 20th century in a science there was an

understanding of the self-organising possibility of a matter under the influence of the internal reasons. There were concepts of the the determined chaos, a fractal, an autopoezis, dissipative structures, synergetrics [220]. All theories are approximately about the same. They represent doctrines about interaction, about development, about self-organising of different complexity objects. The synergetrics places emphasis on the studying of unstable processes, i.e. processes of the development.

The classical science was a little interested in transitive conditions and processes. They were tried to be excluded from experiments. But all the nature actually is a uniform, continuous, "transitive" process. We live in the evolving, transitive world. Stationary conditions are short-term, therefore the dynamics of processes is more important, than the statics. For an illustration it is possible to result the following ideal example.

Let's consider a behaviour of a mathematical pendulum. The pendulum harmoniously fluctuates about some centre of gravity (an attractor) in which the potential energy is minimum (the lowest position). Under formulas it is possible to calculate the frequency, the amplitude and the centre of fluctuations. For the classical mechanics there is nothing more interesting. But let us look at the phenomenon with the other eyes.

Let's imagine, that on a pendulum there is an adaptive, spontaneous world. Conditions of its existence in different points of a trajectory are various. Time of stay of a pendulum in different points of a trajectory also is variously. The bottom point of the stable equilibrium (an attractor) it passes as fast as possible and much longer is late in the unstable top positions (left and right). More part of the time «the pendulum world» lives on periphery of the attractor, though constantly is in a zone of its attraction. Obviously, the "world" will adapt not to conditions of a zone of an attraction, but to conditions of nonequilibrium, longer existence, i.e. to zones as much as possible removed from the attractor centre.

If some system functions in some ecological niche – attractor, trajectories of its movement will be essentially more confused, than in an example with a pendulum. For what it should adapt first of all (better to everything, but there are limits of possibilities). Obviously, adaptation will be focused on often meeting and long operating factors.

The synergetrics was born not on an empty place. From the theory of the organisation, the theory of systems concepts "hierarchy", «systimatics», "feedback" have been borrowed. These concepts before synergetrics occurrence were actively developed in cybernetics and the general theory of systems [30]. The cybernetics studies processes of self-organising of already existing systems. The term self-organising used for the first time by cybernetic Eshbi (1947).

In order the organisation will not break up under the influence of external influences, in it self-preservation processes - homeostazis must work. Homeostazis is a self-organising special case. Homeostatic objects cannot evolve, they are too conservative. For evolution it is necessary to break a static character of the organisation, allow it to pass in other condition and to fix a new condition. The synergetrics studies mechanisms and the reasons of evolutionary transitions.

Probably, a brake for cybernetics development was the concept of "a black box". Cybernetics did not interest, what was inside «a black box». It is important, as on an input of system functions are connected with exit functions. From the position of such concept it was possible to see a generality of control systems in the car and in an animal [44, 45]. But the further development became possible only at a maintenance disclosing of «a black box». It is important not only, what occurs, but also why it occurs. This problem the synergetics puts before itself by.

In the dialectics concepts "development", "jumps", transitions from one quality to another were widely used. But these concepts were accepted as the fact without an explanation of mechanisms of their realisation. Darwin very successfully for his time has explained the mechanism of the development which was reduced to a known triad: a variability, a heredity, a natural selection.

The synergetrics has successfully concentrated the attention on disclosing of self-organising reasons, development mechanisms, but as always «behind a shot» there is a philosophical question, where the development laws undertook from. The uncertain answer usually sounds: «such is a property of a matter». This property of a matter some try to reduce to the information, to the information model of the future, which in the curtailed kind is in a material substratum [185]. But such idea in a kind of aiperon presents for a long time in the philosophy of Anaksimandr.

In synergetrics casual processes are not ignored any more, and are considered as the important component of development. Accident was considered still in Darvin's evolution theories. Darvin considered, that casual changes of organisms under favorable conditions can be inherited, that leads to a kind change. Darvin's accident contradicted to Laplas determinism.

Laplas assumed, that the knowledge of a state of affairs in the Universe at present does a state of affairs known during any other moment. But Laplas specified, that the knowledge of laws is not exact, but likelihood. Laplas accident is predicted (likelihood), but an accident of Darvin's evolution is unpredictable, hence, in the synergetrics an other version of an accident [224] "works".

The first steps in the nonlinear World were made by mathematicians who have established, that one reason can generate "a bouquet" of consequences. According to synergetic representations some system during the development (movement) comes sooner or later to an instability condition. In a zone of instability as a result of fluctuations the trajectory of the system development can sharply change [220] and bifurcation occurs (branchings). The quantity of possible variants of the subsequent existence is not infinite also their choice often is casual. The above nonlinearity of environment, the arises alternatives of a movement choice to more new attractors. Under the influence of identical influences mechanical systems can sharply, unpredictably change their condition (make befurcastions). In chapter 5.2 we will show, that the development of difficult objects can proceed without befurcation jumps, smoothly changing the condition.

The mathematics has opened a special kind of the determined accident. Investigating simple enough systems (for the difficult there is no "capacity" of a mathematical apparatus), the mechanical objects behaviour of which is difficult to predict on the basis of initially set parametres have been opened.

In 1744 L. Euler, using calculus of variations for definition of equilibrium conditions of the compressed column, has found out befurcation its conditions (befurcation is a plug, splitting of ways of the development, the change of conditions). The sense of its experiment was reduced to the following.

If a rigid vertical core to compress along a vertical axis at some critical pressure the core will be bent by jump. A bend direction (a new condition) to predict is impossible. It is defined by casual fluctuations (small influences) during the moment of befrucation. So dynamic accident in simple mechanical systems [204] has been opened.

It is necessary to pay attention, that Euler's and Poincare's works have found out the phenomenon of befrucations in mechanical systems which jump can change the condition, thus, not breaking the integrity. Euler's column after pressure removal reverts to the original state. The indivisible object simultaneously can be only in one of possible conditions, therefore befrucations are reversible occur under the scheme «OR - OR».

Attempt of the decision of a problem about movement of three massive bodies in the field of own gravitation has led to a strange result. Being in vicinities of some centre of gravitation, weights make unpredictable, not repeating trajectories of movement. Thus, balance of system is reduced not to a statics, and dynamics of unpredictable movement in some zone of an attraction (such zone of an attraction has received the name a strange «attractor»). In the given example accident is property of the system.

Developing the theory of befrucations, Poincare A (1912) has created the general qualitative theory of dynamic systems. Following on Poincare and Lyapunov's way (1857 - 1918), Andronov and Pontyagin in 1937 have entered the important topological concept of a structural stability. The Frenchman R. Tom has created bases of the accidents theory. Arnold and Ziman continued his works. The theory of accidents is successfully used at calculations of mechanical designs and covers. However, it is inconveniently to extend this theory on sociobiological objects [204].

So, the scientific thinking included concepts of befrucation, an attraction zone (attractor), a dynamic chaos, accidents.

The impression of this novelty was so is great, that has left traces on an image of some scientists thought. Often these concepts without changes were broadcast on properties of difficult systems. Lower the special attention will be paid to this question.

It is very interesting, that the desire of expansion of the ideas is very great, therefore both in the past, and in the present this tendency is accurately traced by historians of a science. The classical thermodynamics (entropy) unfairly extended "for the whole world". The modern synergetrics also tries the mechanisms of self-organising received on very simple objects, to extend on social systems.

The world image, earlier accurate, and idle time, was washed away, became similar to reflexion in a rough, wavy, curve mirror. It became clear, that last clearness was a consequence of a strong abstraction, simplifications, unwillingness to see behind straight lines tortuosity (fructation). Such rectilinear world is described by the Decart system of coordinates, in which axis infinite, uniform and direct. Such vision of the World has found a reflexion in the style of painting, named a cubism where contours of objects appear straight lines or broken lines. To all it is clear, that if available there are only large fragments of a mosaic the mosaic panel will turn out very rough, approached, sometimes unrecognizable. If mosaic elements small the image more detailed, accurate, and its information maintenance is great. The postnonclassical science «draws a picture» with small strokes. The less sizes of a mosaic, the more it is possible to represent the validity of reality.

It is very difficult to process the surplus of information, therefore information is "compressed" (pass to larger mosaic blocks). For example, in the statistican, the statistical physics use average sizes. But at averaging the valuable information can be lost. The joke is known that agree to the statistican in hospitals at patients average temperature is normal. In synergetrics also is used a compression of information (complexity curling). It was revealed, that a system development not in the equal importance depends on the initial set parametres. Some parametres can be neglected, but there are main things, significant for development of system parametres which named «order parametres». The research problem is reduced to detection of parametres of an order [102]. It is necessary to recollect the system analysis where also "turn off" complexity of investigated objects to a comprehensible level.

Results of research depend on accuracy of a method and accuracy of the measuring tool. New details have changed a world picture, the self-development reasons began to appear. We will result a bright example.

At a measurement of a coastal line iength of an island the observer will find out, that the length grows in the process of a measurement accuracy increase. If to raise an accuracy of the measuring tool among: metre, centimetre, millimetre, micron, ungstrem etc. the length of a coastal line will aspire to infinity. Leaving from the scientific "cubism" has led to opening of nonlinearity of the world, development of nonlinear thinking.

The theory of fluctuations with the nonlinear thinking (L.I.Mandelshtam) became a prototype for synergetrics. In 30 years Mandelshtam has formulated a problem of nonlinear culture, development of nonlinear intuition. Nonlinearity of a system behaviour can be considered as the response not proportional to a force of an influence. For example, it is possible to catch a cold on an easy draught, but to go through

an ice shower. Durability of a fibre is very great at a stretching along an axis of a fibre and is very small in a cross-section direction. Resistance to body movement increases in a liquid not proportionally speeds of movement. Nonlinearity is a various sensitivity to different parametres of influence, for example, the resonance phenomenon, blow in a sensitive point, an allergy.

In the east World outlook for a long time there is an understanding of a nonlinear communication between cause and effect, between action and result. Small, but correct effort is possible, figuratively being expressed, « to shift mountain», to construct the difficult organisation [101].

Environment at structure reorganisation can increase the nonlinearity. It is possible to imagine a parade-ground on which soldiers chaotically move. At such situation to pass on the car through crowd is impossible. But if soldiers to group on companies, between companies the free space appeared on which it is possible to pass. Structurization of the environment has created nonlinearity and has opened possibilities which earlier was not. Nonlinearity is shown in the semi-conductor materials which are passing an electric current in one direction and not spending other. There is a point of view, that the whole world is nonlinear. Linearity is a strong hardenity of the validity, a strong simplification. The linear equations are simple and have unequivocal decisions, therefore desire simply to explain the world pushed researchers on a way of the linear thinking.

Environments and systems can be different degree of nonlinearity. Since some nonlinearity, effects of self-organising [34, 101] are shown. The elementary formations of the world, the elementary structures arise spontaneously, as instability, as a result of growth and strengthening of fluctuations. As an example numerical experiments with the combustible environments, shown a spontaneous aggravation of burning the fire which burns out from the middle, and can serve in some zones, occurrence and disintegration of structures [101]. Different types of structures correspond to different nonlinears. The world appears in that case as hierarchy of environments which possess different properties (different values of the constants, different types of dissipative processes, different nonlinears).

Feedback are necessary for maintenance of self-organising processes. Such processes have been described still in «Tectology» by A.Bogdanov [30], and further are developed in «the General theory of systems» (GTS) L fon Bertalanfy [25]. The cybernetics was also based on mechanisms of feedback. All cybernetic and electronic devices generating fluctuations, have a positive feedback.

Thus, the synergetrics is the synthetic science uniting reductionism and holism, realising the possibilities as a result of convergence of many previous sciences. Synergetrics of Hakin has the the forerunner synergetrics of physiologist Sherrington (the coordination of bending and unbending muscles acions).

The synergetrics and nonlinear thinking have arisen in natural sciences, but their appendices are useful to social processes, for example, the economic. The nonlinear thinking becomes distinctive line of a human history. The history passes from a descriptive phase to a subjunctive mood. The history course is estimated in respect of alternative scenarios [53, 132].

V.G.Budanov [35] describes six making synergetrics: homeostatics, hierarchy, an openness, nonlinearity, instability, dynamic hierarchy.

From the East the synergetrics has apprehended and develops ideas of integrity (all in all), recurrence, the general law, a uniform way to which the World as a whole follows. From the West it took positive sides of the traditional analysis: a support on experiment, the general importance of scientific conclusions, their translation from one scientific school to another, from a science - to a society.

The synergetrics smoothes sides between the natural sciences and the social science. In natural sciences presence of the observer is considered a hindrance for experiment. In a postnonclassical science any natural-science model ignoring the fact of presence of the person, is treated as doubtful [63].

As any science, synergetrics is only a model, hence, in it there are fragments clearly outlined, but there are also indistinct, dim representations.

As the synergetrics building is under construction experts (professionals) of different fields of knowledge, to avoid mutual misunderstanding difficultly. The synergetrics base was put in pawn by mathematicians. At humanists the trust to mathematics is that all of them accept conclusions for the absolute since check up them cannot. Mathematicians can not know many variants of not simplified reality and

extend the conclusions to a class of the phenomena which does not give in to mathematical formalisation.

Vivid example of very proof myth (excessive expansion of concepts) is the consequence from the second law of thermodynamics (the law of increase of entropy) and sacred belief, that concept "entropy" as the chaos measure, can be applied to any biological and social systems. There is one more proof belief, that «in the isolated systems self-organising cannot be realised» [185]. The critical analysis of concept entropy is spent in section 2.2.

The synergetrics has created a powerful heuristic potential, but its conclusions for difficult (biological, social, space) systems is necessary to apply with care. We will show, in what befrucations distinction, proceeding in simple systems, from difficult objects brfrucations consists.

The indivisible sphere can roll down from mountain top in one or in other party (OR - OR). But the water pool can simultaneously flow down both in one, and in other party (befrucation under the scheme «And - And»).

As a befrucations example the image of the hero at the crossroads (jn Vasnetsov picture) [34] is often resulted. The person faces to a dilemma what to select the further way. It is a fork example (befrucations) for indivisible object under the scheme «OR - OR». But on a fork there can be a group of heroes which will go to investigation on all possible ways. In this case the initial system will break up to parts and each part can choose the further, independent way. Ways can be not two (a befrucation), and as much as necessary («polyfrucation»).

The way choice can be determined by a history, genetic memory. Heroes can have preference, desires, to be tired, hungry, strong or sick, etc. the choice is defined by a memory of a system, and not just casual fluctuations. Besides, in the given example of a way of the further development (road) already existed till the moment of their choice. However it is possible to present a situation when heroes, having lost the way in wood, are compelled to cut through to themselves glades, i.e. independently to create variants of roads.

In continuous environments change of any structures changes environment (elements are a part of environment), therefore befrucations represent joint process of transformation of environment together with an environment. New possibilities generate new technologies of a survival. Natural balance is actively broken by a society, and the society is mutual to it adapts.

Explosion of some star can be carried to a type «OR - OR» befrucation with a structure destruction since the star way has stopped and there was a way of a dust fog. From a dust fog in certain sequence there are both stars, and planets, and asteroids (and - and). Apparently, difficult, dividends of systems are much more variants of behaviour, than indivisible, mechanical. Polyfrucations can occur not during one moment as scattering of fraction from a gun, but to be developed in time as shooting by bullets from the automatic machine.

It is possible to result one more argument denying exclusiveness of the befrucation mechanism of evolution under the scheme «OR - OR». Befrucations under the scheme «OR - OR», have possibility to choose a way conducting in evolutionary deadlock, depriving possibility of the further development. If the choice has appeared not deadlock in the following befrucation the system again is exposed to selection (deadlock - not deadlock). On the long branched out way the probability to become isolated at deadlock increases in a geometrical progression. Such mechanism should lead to an evolution degeneration. As analogue the system of selection of soccer teams can serve in the World championship. The commands which have lost in a semi-final, leave for ever. As a result there is one command the winner.

So, polyfrucations under the scheme And - And are extended in the nature more, than befrucations OR - OR.

2.2. A chaos, an order, a complexity.

The synergetrics is presented by opinions very much a considerable quantity of scientists from different fields of knowledge. «The central problem of synergetrics are self-organising mechanisms. It is considered to be, that in the isolated systems a development is directed to chaos, to entropy growth, and in open systems there is a complication» [34]. The starting point for such opinion was I. Prigozhin's work «the order from chaos» [178]. The resulted citation is some stamp repeatedly repeating in the literature. Before to begin discussion about a correctness of such statement it is necessary to be defined in sense of terms. What there is a chaos? Also what is an order? Not clear there is also a concept "complexity".

«In myths of the Ancient Greece and in doctrines of antique wise men the chaos is considered not simply as a faceless chasm, shapeless beginning all wordly creations, but as a universal creative principle, potentially, in the curtailed kind, comprising all samples (forms) of formation. The chaos all opens also all develops, to all gives the chance to leave outside, but at the same time it absorbs all, levels, hides inside» [101]. It is possible to notice, that the value judgment of chaos expressed in a natural language, the nonexistence, a world substratum sounds as something incognizable, not clear, faceless, shapeless. The chaotic phenomena associate with accident, unpredictability. The contradiction is available. The chaos is a shapeless condition, but from it appears a lot of issued prophetic (again hallucinations).

This contradiction can be authorised, if in it to allocate objective and subjective components. In a dark room it is visible nothing, but from this does not follow, that it is empty. When from such room the black cat runs out, it does not mean, that it has arisen from darkness. Very difficult structure is not perceived by consciousness (it is not modelled by forces of a brain). The contradiction is authorised as follows. **The difficult order in consciousness is felt as a chaos. Too big complexity is a darkness for consciousness**.

In a process of techniques development and research deepening in chaos it is possible to see earlier not noticed structure, i.e. the chaos represents difficult, not at once structure comprehended by a mind. For example, E.Lorentz in 1963 has given a structure of the global meteorological phenomena which were considered earlier as the chaotic in the form of the differential equations. Known function of distribution of molecules in the speeds, deduced by Macswell [165], testifies, that movements of molecules of gas do not represent full chaos, and have a certain order in distribution of molecules on speeds of movement. At certain temperature it is possible to calculate, how many will be molecules "cold", how many "hot" and how many "warm". Despite freedom of movement "will", a molecule in gas strictly ranged on kinetic energies. Whether it is an example of a chaos structure, but to see it is possible only by means of special experiments.

Obviously, the concept chaos since ancient times remains subjective. That for one observer there is a chaos, for another - an order. One listener of a symphonic orchestra perceives harmony and orderliness of music. All the same perceives another as a noise (a disorder).

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As the consciousness finds ways of modelling of very difficult, confused situations, in chaos is started to find out some orderliness. For example, the probability theory describes a wide range of the phenomena where accidents appear. Such is throwing of playing "bone" (a cube which sides are marked by numbers). Precisely to predict occurrence of desirable number is impossible, but it is possible to predict frequency of occurrence of this event. At repeated throws the probability of occurrence of number will make 1/6. The more the number of throws, the clearer probability of 1/6 comes. Obviously, the phenomena connected with a concept of probability are not the most chaotic. They possess an invariant, i.e. a stability of frequencies. The probability theory "has seen" some law in a casual event.

However at experiments with a cube throwing one event occurs to probability to equal unit which why - that do not notice. This event is the fact of the bones falling on a table. If there will be no falling to discuss «on what party of a cube» it is not meaningful. Apparently against accidents always it is possible to find out the determined events. Dynamic accident in experiences with Euler's column was always accompanied by the fact of befrucation. Befrucation proceeds as the determined event, but a befrucation direction is casual.

Befurcations are often resulted as an example of a casual development. But such accident nevertheless assumes existence of the determined field of possibilities. The sphere which is at the top of a pyramid, has possibility to roll down in any of four parties, but not to fly up upwards. To predict precisely a falling direction is impossible. It is an example of befrucation under the scheme «or - or». Only four, but there is no more possibilities.

A set of systems make a set befurcations. A natural selection rejects unsuccessful befrucations. Thus, casual actions turn to the purposeful. (The purpose is a movement in attractor).

It is necessary to pay attention, that the resulted reasoning does not reflect a character of the evolution live by Darwin. In the evolution there is a set of additional factors, such, as diffusion of genes in population, not accident of a choice of ways of the evolution, a preferable choice, etc.

In biology the paradigm of an accident of mutations dominated for a long time. But, that there is an accident, was held back. If number of tests certainly, it is possible to count up frequency of the set event, but it not always has likelihood character. One mutations occur to certain frequency, the third are fixed seldom, others - with change by frequency (a fashion on a mutation), the fourth - never. Biologists describe a fashion on a mutation, as a sharp increase of a probability, and ignore "dirty" experiences.

Accident and probability are not the same. Accident has the form either gaussov, or hyperbolic distribution. Distribution for organisms on sorts, words on frequency of the use in the text, tax bearers on the sizes of the assessed tax is hyperbolic. Here there are no average sizes, and accuracy of measurement is impossible will raise quantity of measurements, i.e. is not present a gaussov dispersion. But a steady distribution of unstable frequencies [224] is an invariant.

Homogeneous systems are rather simple for the mathematical description, therefore they are often used for demonstration achievements of synergetrics. For example, in a homogeneous environment with nonlinear properties (oil) at heating chaotic convective movements are carried out, but then chaotic movements are ordered, there are streams in the form of correct hexahedrons (Bernard's cells).

Kurdjumov S.P.'s modelling burning of homogeneous, nonlinear environments the computing experiments, have opened processes of selforganising, occurrence of structures of burning with set of maxima. Burning became very non-uniform. There were zones where burning sharply amplified. Through the certain time, the arisen structures attractors broke up. Dissipation (dispersion) of attractors passed not in a random way, and on certain channels, i.e. dissipative processes also were structured [101].

Sometimes dissipative processes identify with a chaos, **but dissipation is not always a chaos, it can be carried out on the organised channels,** for example, allocation of a waste in live organisms, the organisation of export of a waste on a dump, communications between organisation subsystems, etc.

Chaotic diffusion can be observed only in homogeneous elementary environments. But even heat diffusion extends preferably along a metal core. The majority of dissipative processes are structured. The logistics (a science about rational management of substance streams) the purpose has the organisation of raw and commodity streams in a society [194], i.e. creation of operated dissipations.

It is considered to be, that dissipative processes are irreversible [186]. In live objects life cycle is irreversible. The old man still never became the baby. The burnt down fire has not returned to a condition of fire wood. But in the elementary molecular systems it is possible to find out convertibility of processes. Balance water - ice can be broken towards water or towards ice. If diffusion of heat from environment exceeds heat outflow ice will thaw, there will be only a liquid water. But if heat "leaves" in environment water will freeze. Changing character of diffusion streams, process can be operated. Universe development on model of the Big explosion name evolution. At expansion and cooling of the Universe plasma passes in gas, gas is condensed in a liquid etc. The Reference of these processes probably if the Universe starts to be compressed.

For elimination of terminological uncertainty it follows in definition of concept "evolution" to make an addition: «Reversible processes should not be carried to evolutionary processes. Only irreversible processes represent evolution». Thus, in the nature there are processes both reversible, and irreversible. Evolution can be presented as not confident gait to the future. Two steps forward then a step back (cycloid). **The synthesis cycle is replaced by a disintegration cycle. Synthesis in aggregate prevails**.

In I.Prigozhin's work «The Order from a Chaos» is not given an accurate definition what there is an order and what there is a chaos [178]. For example, Prigozhin defines a laminar stream of a liquid, how chaos for it is impossible to describe a movement of each separate molecule. When at increase in speed of a stream spontaneously there are turbulent whirlwinds, it estimates this event, as orderliness during self-organising. In a laminar stream of a trajectory of movement of each molecule a human mind cannot trace, therefore process represents as a chaos. But occurrence of large turbulences of a stream is quite perceived by the person. This phenomenon is estimated as an organisation occurrence, that is an order. However in a turbulent stream of a liquid the chaotic component has not disappeared, against visible whirlwinds of a molecule continue is unpredictable to move [237]. But the consciousness filters «surplus of the information» and operates with that part what is capable to "apprehend". Filtering movements of each separate molecule, the consciousness simplifies an image of a system, leaves only macroprocesses. It turns out, that the order is only a mental understandibal object part. Prigozhin in a turbulent stream sees only macroformations and ignores molecular chaos. Thus, the knowledge means exarticulation of system from a chaos. The system represents an image of significant communications for the observer against a chaos. The consciousness eliminates "superfluous" communications (does not see them) from model, but really they remain in an object.

Let's show an example, that the chaos contains more information than an order. On the radio receiver aerial signals from hundreds radio stations arrive. As a result of imposing of radio-waves information noise (chaos) turns out. The resonant filter of the receiver is capable to allocate a useful signal from noise. As a result, we listen to one broadcast. Reconstructing the receiver, it is possible to hear many useful broadcasts. It turns out, that the chaos is the sum of not perceived information. It is possible not to reconstruct a radio receiver, and for a subjectivity exception to conduct reception simultaneously on hundreds radio receivers then each listener will confirm, that it accepted the helpful information. It is possible to draw a conclusion, that the opinion on character of course of process (an order or chaos) depends on a way and the supervision purpose. So, the chaos is a quantity of the information not comprehended for the subject, information noise. The order is limited, therefore a mental understandable quantity of the information.

The chaos cannot be static since the statics is perceived easily by a person. There is time to investigate and comprehend it. The chaos is dynamical. If the structure exists quickly, there is no time to notice and study it, so such objects are absent for perception. The fireball escapes scientific research since it is unpredictable appears in an unexpected place. The similar picture develops from UFO. The vacuum long seemed emptiness because it was not possible to see its structure [108]. Presently "virtual" structures of vacuum are opened. From the chaos for an instant there is a particle and has time to disappear in the chaos before the consciousness has time to fix, "make out", study it.

Determination of a chaos means a discovery of unaccidental, invariantal in it. So, when from pseudochaos processes something idle crystallized, comprehensible to consciousness, that is accepted to speak that the order was born from the chaos. In reality from supercomplicated (incomprehensible) order was born more simple (comprehensible) order. We again met with a nallutionation, when a model in the consciousness is taken for a reality of being. Similarly in middle ages it was considered that the Sun "goes" around the Earth.

The chaos and the accident are not always identical. Accidents are miscellaneouses. It is a notunderstandable regularity (Darvin), a vagary of the motion (the dices), a relativity of the knowledge, a crossbreeding the uncoordinated ways (the mutations), a preferred choice [224].

Mehanicizm interpreted an accident, as a crossing of the invisible regularities. The accident was interpreted as notunderstandable regularity because of the mechanical engineers knowledge lack. The statistic glance contributed an invariant - a notion of the frequencies stability.

The variety of the casual event is a preferred choice. It is possible, throwing bones, for the first time to get on anything numbered six, but it is possible by volitional way to put (deliver) the anything numbered six. The choice is realized in a field of the reasonable preference, but event falls out in a field of the real possibilities. The choice of a human actions usually depends not from an event, but from a moral, that is why a theory of probability can not predict the decision in socium actions. The known problem with a Buridanov ass has not a logical decision only therefore that logic does not take into account resewing, founded on preference. The ass, being half way between two absolutely alike haycock network on an equal distance from them, will choose not logical, but preferred variant. Let us go to that haycock, which it more approaches.

The game theory was created In 1900 by E. Cermelo. On the background of the accidents each player can act so that guarantee itself a possibility of the advantage in the worst situation. The strategy of the play is made. But real players often act not by the rules, but coming from emotions. A result of the play becomes the effect of the free choice [224]. So, in all types of the casual choice the invariants (the regularities) are present.

The artistic image of bifurcations often is introduced as a casual choice of a person on the crossroad, on fork in the road. However a choice of a person of the further way is always painted by a preference. Even, when all roads seem alike, tumbling to the right or to the left precepts from a preference, from the asymmetry of the human body, from previous skill etc. Choosing sort of activity, a person takes into consideration not only a salary, but also his own slanders, skill. Decisions taken by miscellaneous people, in a view of different preferences, can be very varied, and in this reveals itself the accident of the behaviour of the person with standpoint of the outside watcher. For a concrete person his own choice is not mated, but is determined by a presence of memory (the experience).

Than spectrum of the possible conditions of the system is broader, than more the liberty actions it has, the more chaotic it is perceived. Spectrums of the liquids always are more varied, than spectrums of hard things, since molecules of the liquids limited in their behaviour. Groups of molecules form the structured ensembles, which then and there disintegrate to appear once again. The separate molecule in a powerfully rarefied gas can move in any direction and on any distances. At hit in lees of the other molecules of its possibility of the behaviour sharply reduse. Neighbours begin to disturb, limit the liberty of the displacement.

Enabling an element in a system always shortens the degree of the liberty, but new system relationships (the chapter 3) appear. A person on enterprise can not do desired, but must do the necessary. The spectrum of the possibilities grows shorter. The paradoxical conclusion is confirmed, that a transition from a chaos to order presents not growing of the structure difficulties, but the simplification through the sequencing, a reduction amount of attributive information (about this more idle time spectrum testifieas). To get the ranked sculpture, from the block of marble is cut off spare. To perceive the radio broadcast, it is necessary to cut off from signal all the other. So an evolution development from a simple to complex object, is built by cutting spare, rolling up of the surplus degrees of the liberty [78, 110]. This paradoxical conclusion needs explanation, because disagrees all known interpretations.

When from material (not yet got to know) substrata mental understandable atoms appeared in the course of evolution (100 types), this in scientific consciousness was reflected, as arising of the order (also as curls on the background of water by I. Prigozhina). It is accepted to consider that all sister atoms are identical. But their gross amount and variety of the motion are incalculable. Qualitative atom level by ranked consciousness, but quantitative remains chaotic.

After filling an atom level in the consciousness molecular, celluar, organism and other levels have begun to be filled. On each following level variety of new elements and new relationships encreased, and this fact subjective was valued as growth to difficulties though at amount "old" relationships and elements grew shorter. Since all new is a result of a substrata aggregation, so an amount of sbstrata relationships and elements decreased, but their initial amount is so surplus that substratum for consciousness hitherto remains as the chaos.

It follows to remember that "ranked", on essences, more simple structures, are shipped in their first-born, more complex "chaotic" substratum and inseparable from it. Similarly crystalline, ranked iceberg (hard water) is sunk in the chaotic water.The consciousness separates the image of an icy block from the fluid water. The graphic image of the following for some organism is shown on fig. 2.1.1.



Fig 2.1.1. "High-rise" architectonic of an organism.

"Foundation" is valued as a chaos, but "roof" as an order. So, evolution develops toward reduction amount primary elements and relationships, "rolling up" (the combination) them in units of new elements and new relationships. Each new relationship is formed from ensemble "old", so if value the difficulty on amount of the relationships in unit, that evolution is a simplification, a development from a complex order (the chaos) to an easy order. The order of the second level is born from the order of the first level. The similar ideas D. Bom voiced. "I would say that the disorder does not exist, but this chaos - an order of infinitely complex nature".

Classifying structures of the world, the consciousness identifies only tops of an "iceberg", cutting off from an image the whole foundation. If there are little icebergs, that it is possible to study, to understand, to order yhem. However when on each hierarchical level plenty of varied structures appear - agrigats (when hummocks appear), then they are perceived as difficulty (the chaos).

The consciousness is unapt to model the surplus ensemble. The excess of information is an analog of the defect of information. In both events model is not got and is valued as a chaos. In this connection biosphere and biospere's processes are still much weakly studied. At excess of information in order to build a model, it happens to integrate the structures [212]. So Prigorzhin considered only a curl on the background of the liquids, or organism as integer on the background of atomic-molecular substrata.

The similar thought is possible to see in the work [101], where there is communicated that the process of the forming structures is accompanied with the growing of nonlinearing ambiences. Under very strong nonlinearing in general is absent the spectrum of attractors, a difficulty is dieing out. "A complex system stabilizes itself. It moves in the development process to some nearly uniform condition, to the unity and harmonies uniting parts in it, as, strictly, supposed the east sages". And a complex system in the process of its development it seems builds the new unceasing ambience, in which fluctuations more small to some average condition, stable growing in the mode with an intensification" [101]. This quoting is conformed to the statement that evolution - a process of difficulties reduction.

However findings [101] come from experiments on simple nonlinear ambiences. For supercomplicated systems such conclusion can suffer a change. Too generalised statement, founded on simple experiments, causes the doubt: "In supercomplicated nonlinear systems the fluctuation become more often, but their amplitude decreases". If consider the biosphere evolution of 4 mlrd. years, the leap to the reason, a humanity appearance (0,5 mln. years back) are impossible refer to small fluctuations. The birth of technosphrer (3 000 years) also a sharp phenomena. Obviously that supercomlicated systems can have different from simple systems mechanisms of evolution. The regularities found in work [101] are not the only.



Evolution

Fig. 2.2.2. An evolution dynamics of the objective change amount relationships and the subjective perception of them by the consciousness. 1. - A change amount of substrate relationships. 2 - A growing amount and varieties of new, agregate relationships.

In the 2.2.2. a change the composition of the system relationships in the course of the evolution and their subjective estimations is graphically shown. Any ensemble primary or secondary relationships are taken as difficulty, chaos. The order and the chaos are not alternatives, but a simultaneous condition of one and the same system, as two sides of one medal.

Unlike a medal between the chaos and the order there are rather much intermediate conditions (mezoconditions). It is possible to intensify the order or the chaos, but it is impossible to dispose from the triunity chaos - mezo-condition - order.

In simple homogeneous (uniform, single-phase) systems ranked and chaotic motions are made by alike elements simultaneously and together. The flow of water and a curl in it - all are motions of the water. In monocrystalls atoms make fluctuations beside the node of the crystal cell with an amplitude, depending from the temperature. The atom at different moments of time is found on different distances from a point of the balance. A part of time it is situated near the node of the crystalline lattice (the order), but a part of time "walks" in its vicinity (the chaos). So it is impossible separate the order from the chaos if deal with homogeneous systems. This division occurs only in the consciousness of the watcher (the hallucination) as a matter of convenience for modeling.

However the broad class of heterogeneous, poliphase exists systems, mathematical description of which is impossible yet. In such system zones of miscellaneous order degree are in different parts of space. The amount of such systems is enormous. The mountain sorts of minerals are a heterogeneous mixture of minerals. To the number of alike systems compositions of polymers, ceramics, steel, alloys, laminated designs, organisms, hutches, sociums, biosphere, cosmic objects are treated.

Any system on determination must be heterogeneous and that is why nonlinear. If elements are in it, so they must have borders. The homogeneous ambience is uniform on a chemical composition, but it can be an outline material in the manner of flow. For instance, water is a homogeneous ambience, however on surfaces waves, curl flows can be. The waterfall, in particular, can serve as the example of the firm stream structure [30].

Heterogenety ambiences can be defined not only by a chemical composition of elements, but also by a phase composition. Crystalline ice (water) can be in balance with fluid water (the two-phase system). In this case chaos of water is free from the order of ice. Such picture is examined in amorphous - a crystalline polymer [52].

So, for the persisting work a conclusion is important, that the order and the chaos is a system unity, as the light shall is inseperable from the darkness. The absence of photons - the darkness. The presence of photons the light of different intensivity. The absence of the got to know order is a chaos. The appearance of got to know (ordered) of structures is valued as an order of the miscellaneous level.

But if a system is hetrogeneous and consists of amorphous and crystalline material mixture, so chaotic and ranked phases can live their life, not coming one into another. Order in politics can match with disorder in economics. The atom of society, a person, can be practically in all social subsystems simultaneously and consecutively. At one time he can consist in composition of the family, a work group, a political party etc. Groups of people are always heterogeneous. They interact, but do not mingle. Appeared-pouring society in the manner of heterogeneous social systems has not found its developer yet. But even idle time collation causes the doubt in possibility of the formal synergetic ideas carrying from simple systems on very complex, heterogeneous systems.

Presented above, allows to consider the poetry as a facility of the system simplification of the word-combinations. The poetry is a form of the thoughts expression, more limited by rules, than the prose. Its simplicity is merit perceived as an artistic value. There is the rhythm in it, as in music. In the poetry the ways of the thoughts expressions are less, than in the prose, so it is easy to predict a rhyme. The poetry is simplier the prose, since it is more ranked.

The idea of a great surrounding difficulty was spoken by Leybnic (the monads), Anaksimandr (the apeiron). Not far away from it modern researchers are [101]. "First, nonexistence, or great - surrounding, presents in itself a timeless folding of all future and all former formations of the world. But in nonexistence all this is kept in the not finding form. The nature builds on its body what corresponds to its internal trend of self - organization. We "are doomed" on such on-costing, because it is determined by the past and is built in accordance with the projects of future (Hayddeger) [101]. These utterances does not disagree that models of the chaos, which is brought above and is indicative of the hidden order of the chaos.

How it is possible to present a structure in a potencia? If there is an algorithm of a building construction, and it is strictly realized, that in total after its performances the structure - a house appears. The algorithm (the project) is a virtual house, house in a potencia. On question, what is a borsch, it is possible to tell about the way of its preparation (the algorithm), performance of which will give the answer the supplied question.

All necessity is kept in a chaos for the construction, there is a set of unordered materials. Only creating algorithm is needed. How do algorithms of the evolution appear, and do they exist? The present study does the attempt to illuminate this question, but a termination of the subject is impossible without a descreditation of the myth about the entropy - an entailment of the chaos.

Conclusion.

1. The order and the chaos are subjective notions and have not a quantitative expression yet. The order and the chaos – are not alternatives, but a simultaneous condition of one and the same system, as two sides of one medal.

2. The order – an understandable condition, a limited variety, clinging to aims of the watcher.

3. The chaos is a nonunderstandable by wit system condition, the nonunderstandable order. Information more huddles in the chaos than in the order. Too big difficulty is dark for the consciousness.

4. All necessity is kept in the chaos for a construction, there is a set of materials. Only creating algorithm is needed.

5. The development from the chaos to the order does not enlarge the difficulty. Subjective observe grows, and the surplus difficulty convolves. From the supercomplicated (incomprehensible) order - chaos, simpler (comprehensible) order (this subject develops in chapter 5.5) is born.

6. To comprehend something – means to signify a system from a chaos.

2.2. Entropy.

For the first time a notion "entropy" empirical was found by Klauzis in 1865 This function of the type S=Q/T (Q - a heat, T- temperature) is interpreted as a part of a internal energy of the system, which can not be transformed into a work. L. Bolicman (1872) for an ideal gas theoreticaly had removed the expression of entropy S = K lnW, where K - a constant; W - thermodynamic possibility (the amount of the transpositions of the gas molecules, not influencing upon mucrostation of a system) [116]. For many humanitaries brought formulas do not speak about anything. They call attention only on findings, in which entropy of Bolicman is interpreted as a measure of the disorder, a measure of the chaos of the system. A.A. Petrushenko fair notes that entropy - a function "clinging" to a conduct of simple atom-molecular systems. "Entropy reveals in different forms, but thermodynamic form of entropy is only the special event" [169].

If there are no criterions of the chaos for complex systems, that impossible to speak about the disorder of growing or lessing of the chaos. Entropy can express the disorder only of simple systems. For complex systems it should be find the way, characterizing an order - a disorder. The complex systems are multiplanned. The disorder in one function can be compensated by an order in others. A scientist can be very ranked in his own conclusions, but be absolutely helpless in home questions. A philosopher is capable gnoseologically to organize the world, but can not.

It should to call an attention that L.Bolicman did not take into account the internal structure of the molecules, their interaction with each other. Systems, in which the interactions are absent, do not exist in nature, and with the standpoint of synergetics can not develop. In spite of this entropy not critical was started to attract for description of complex developing objects. Bolicman guessed the biological life as a phenomena, capable to reduce its entropy. According to Bolicman and his followers the whole Universe goes to the heat death.

The antithesis to Bolicman evolucionisys emerged. In particular Ch. Darvin has shown that proceessions, occurring in the World, in the course of the evolution (origin of life) do not only degradate, but all time become complicated. The first half of the 20 century notwithstanding the forecast of L. Bolicmana carried to the mankind a model of the Universe birth and evolution, where the processes of self-organisation dominated above the processes of destruction. From a uniform primary helium - a hydrogen gas with the way of gravitation compression thick clot of matter - stars, planets become formed. The Universe became lumpy, both on density, and on the temperature. Chemical composition of it became complicated. Except simple atoms of the hydrogen and helium in depths of the stars all elements of the Mendeleev table appeared. A life appeared. Is this really a degradation? But a conservatism of the thinking is rack. Biologists, for instance, try to prove that all alive in the course of life activity reduces its entropy [168] and this is the main sign of life.

The notion "entropy" is continued to use not only by biologists. The notion "entropy" was entered in 1948 by K. Shannon in the theory of information [231]. If a signal on the leaving of the connecting channel is a true copy of the signal at the input, so with a standpoint of the information theory, this means the absence of entropy. Formulas of Bolicman (S = K ln W) and Shannon (H = P₁ log₂P_i) have only an external resemblance. The sense of information according to Shannon is reduced to a reliable difference of one signal from the other. Shannon himself admonished of overweening expansion of his entropy and collations of it with a thermodynamic entropy. But it has occurred that, from what Shannon forewarned.

For instance, when the development of an insulated system, which according to the second law of the thermodynamics must be accompanied the growing of entropy, notwithstanding conclusions of Bolicman and superstitions of modern synergetics, is not accompanied by the growing of the disorder [236, 237]. It is accepted to think that the condition of the fluid water is more chaotic, than the condition of the crystalline water (ice.) Let us place the mixture of the ice excess and the water in an insulated camera. The ice temperature is greatly below the water temperature. In a certain time the water will freeze. The chaotic water will not turn out to be in the thermostat, but only ranked ice will be. It is got that in the insulated system the spontaneous process of the growing ranking goes. But this disagrees the generally used presentations. If take the excess of the fluid water and little ice, the process will go in inverse direction. Ice will move into the fluid water. So, under some conditions the self-organization process can be directed not to the chaos, but to the order in an isolated system. In order to dispose definitively of dogmas, superimposing prohibition on development of isolated systems, let us consider the row of examples.

The isolated system by itself presents a certain collection of elements and relationships, placed in a shell, impervious for material and flow of energy. In such isolated system laws of the energy and material conservation must be kept. If from the system material "escaped", that inwardly the system laws of the conservation were not kept. It is accepted to think that the development in a certain system can only run with the use of resources, which are found in the external ambience. We shall show that this is not always so.

Let us build the isolated system, in which we include the sources of resources and subsystems of salvaging "departure". In such isolated system any processes will run, including development with complication until the spares of resources exhaust. Depending on capacity on spare and sizes of the system development can run milliards years. Industrial enterprises can work during months on accumulated resources. The sea liner without additional leading-in can cross the ocean. As the example also our Sun and the solar system can serve, which are very weakly connected with other starry system in our galaxy. The energy of the Sun is culled from internal processes of the syntheses of "heavy" elements, which on-herded there on initial stage of the thickening gas-dust nebulas. And these processes provide the development of the Sun from plasm condition to"white dwarves" condition already 5 mlrd. years. Our Universe develops according to the energy, stood out under the Big blast on the initial stage of the evolution. If our Universe is isolated, it develops on the internal source of resources. The established error about lethargies of the isolated systems is founded on experience, which made on systems of a very small energy capacity, where fading processes ran quickly, and connecting conditions from observation excluded. Invisibly, the laboratory presentations have carried on macro- and mega- systems.

In the light of the stated material, it is reasonable to discuss statement that characteristics of dissipative systems are openness, imbalance and nonlinearity. This statement does not cause the objections, but such characteristics can present in insulated systems too. It follows to add that "isolation" is not an absolute notion. It can not be completely insulated systems. Systems with a limited by exchange exist. Since the moment of an isolation a system can drift for a long time to the balance condition, so in an insulated system the condition of imbalance presents too. Our planet hitherto did not come to the balance condition and continues cool off during milliards years. On the depth of 40 - 80 kilometers the temperature exceeds 10000 C.

Nonlinearity by itself presents an attribute not only of opened systems. The linearity always is an idealisation. The whole world is nonlinear, but the degree of nonlinearity can be miscellaneous and variable, sometimes it is possible to neglect it.

Coming back to the entropy, it is possible to add that all laws of the thermodynamics have statistic nature and "work" only in systems, where elements are atoms or molecules moreover under a high density of a material. If consider very discharged gases, when in 1cm there are units of the molecules, that in these cases laws of the thermodynamics and notion "entropy" are not acceptable. If a molecule is only one, that, it does not happen to speak about its chaotic nature. It follows that not even in all molecular system it is possible to use the entropy. On more low level of a difficulty, in the world of the elementary particles, nuclons, entropy as a function of a condition in general is not used.

There are systems in the megaworld, containing hundreds milliards of kinetic units. For instance, galaxies, contains hundreds of milliards stars. Each star possesses a kinetic energy (a motion). Stars are bound with a power of gravitation in concourses - galaxies, which rather stable save their form. However starry units and stars are not accepted to characterize

by the entropy. After its formation a star can be not changed by a material with the other star. And herewith in a life cycle of the star it is possible to see a transition from plasma (the chaos) to a her-throne star (the order). The chaos moves over to order, rather then on the contrary.

We apply to the world of alive and social systems and see, if there is there is a place for the entropy there. We shall wrack, how it will change the amount of elements in the unit of the volume of different objects.

In a common conditions in 1 sm^3 of the gas about 10 atoms are kept. In an alive hutch a raftness of material is higher, but elements are not atoms, they are gigantic protein molecules. We shall value aproximately 10-10 such molecules in 1 cm^3 . Alive fabrics contain 10 hutches in 1 sm^3 . An organism has several hundreds organs. The higher a hierarchical level of the object, the less kinetic units is kept in the unit of the volume. But under a small amount of elements the entropy "loses its own authorities", since the function S= K ln W is statistical.

In scientific thinking the opinion exists that alive creates a disorder (the chaos) around itself, but raises its order (Viner, Shredinger). In the light of the material stated above this is followed to understand in a such way. Alive comsumes highordered facilities, but throws something little organized in the surrounding ambience. We shall prove that this is a steadfast error, either as to use the notion "entropy" for biological object.

Plants comsume atmosphere gases (CO_2) from the atmosphere, from the ground – the water and some microelements. They return gases (0, CO₂, HO), some metabolitieses and diffuse the heat into the environment. In the first approximations entropy of input and output material flows differs little (at the input is a gas and on the output is a gas too). Animals, comsuming except gas and water highorganized matter in the manner of proteins, fats, carbohydrates, they transform them in their body of the similar difficulty. In the biosphere a waste of someone organisms is a highquality raw material for feeding others so it is impossible to consider valuable metabolitieses of organisms as the material with a high entropy. Moreover, alive material on Vernadsky does not simplify a stagnate matter, but even complicates, multiplies the variety. The oil, coal, layer of ferric, bauxite, chalk, lime and many other minerals are created by the alive material. The maintenance of the composition of the ocsigen atmosphere of the Earth, this is obviously imbalance condition, also is an activity of alive [73]. Then about what degradation of the environment the speech is?

However an energy degradation exists. "High-quality" light energy of the Sun changes into the energy of the chemical relationships of the fabric plants, which after ruin of the plant degradates into the heat. However turning the light into the heat is not a specific only for alive. This process with greater intensity is realized by the lifeless materia. The surface of the Earth absorbs the whole light of the Sun and in the manner of the heat radiates the energy back in cosmos, but an alive substance utilizes only several percents of the solar energy.

But a person reduces the biosphere variety, can the opponents object, and increase its entropy by this. Really, a person reduces the variety of a "wild" biosphere, but herewith enlarges the variety of a "cultural" biosphere (the domestic animals and plants). Unnaturally quickly a variety of the technosphere grows, naturally falling into a notion of the envirenment for a person. Besides, variety of a system directly is not connected with a value of the entropy. It is accepted to consider that crystal is a sample of the order with minimum of the entropy, but it is difficult imagine something more monotonous, than a crystal. The most developed enterprises and organizations of a society try to simplify the managerial system, but this is impossible to connect with a degradation at all.

Each level of the world organization must be described (and is described) by its language. Is it possible only on cut on a hemp tree to judge about the krona organization, the leaves form, flowers smell and etc.? It is impossible to understand the complex phenomena, resting on very simple models. Try to describe the architecture of a building, knowing only a structure of a brick. The laws of the thermodynamics can describe a gas, but for feature of a building they are obviously not enough.

Using a system vision of the world, it is possible to explain that in complex systems thermodynamic laws are not broken. They simply do not act there. The laws of the thermodynamics act in idealized systems, where in attention are taken only heat processes and flows, but the other sides of objects (structure, selfdevelopment, management, form, colour, scent to emotions, consciousness and pr.) are not included in the image of the thermodynamic system. The thermodynamics is "blind" to many sides of the world. In complex objects, entropy "works" on ground floors only. For analogy it is possible to take the image of a building. It is possible, ground floor consists of atom, molecules. The growing "entropy of" foundation (leveling of the temperature, homohenisation of concrete composition, resorption of internal tensions) will not at all influence upon the condition of the roof and the mood of the upper floors inhabitants. The destruction of the foundation (the growing of difficulty, appearance of ensemble divisions, bounded between themselves fragments, arising of the rifts and internal tensions) can influence upon the toughness of the building. The disorganization of the complex systems not always brings to the chaos. If a stone boalder will be sawed up on blocks of the correct form, that disorganization of the boalder does not look a chaos.

In spite of the said, by the notion "entropy" handle in miscellaneous science, consequently, in this there is some need. We try to understand, why in molecular systems in rows: gas - liquid - crystal entropy decreases. Visually in this row increases capability to save the structure (the form). Gas strives unlimited to enlarge and has no a form. The drop of a liquid is already executed (the sphere), but not yet firmly. A crystal presents the sample of stability. The alive material exists and saves stability, order, but not in consequence of reduction of entropy, but due to process of the management. In itself the entropy of Shannon, characterizing stability of the signal to hindrance, is a measure to instability, a measure of "noising" the relationship channel. So, in the case with the entropy the substitution of notions has occurred, under the entropy the measure of the system stability started to understand.

Conclusion.

1. In insulated systems at the presence of spare resources the processes of dissipation, self-organization, complication, growing of the order can exist.

2. Entropy is not a measure of the disorder in complex systems. Under some conditions the process of self-organization in insulated system can be directed not to the chaos, but to the order.

3. Entropy characterizes stability of miscellaneous difficulty and hierarchy systems.

4. All without exception processes and structures are nonlinear and dinamic. Nonlinearity and statics are an idealisation, simplification, subjective criterias.

2.3. The Hierarchy of Paradigms.

In this monograph an ensemble of quotient facts, reflecting the Universe synergetics on all levels of the difficulties is collected. The quotient events are "visiting card" of the more general laws. Let us try to create the system of the World synergetic laws.

The nature evolved from the foundation to the roofing, but science develops from the roofing to the foundation. So let us lead an interpretation from the general to the quotient (the deduction), coming from a system approach. At the beginning it follows to formulate the most general paradigms, afterwards select their components, effects.

It is impossible to consider the laws general, borders of the applicability of the laws can spread in the field of the known empirical fact only. Above already are happened the examples of limitedness lof the thermodynamics laws (entropy). Last 10 - 20 mlrd. Years a stage of the Universe expansion is occured, which can be changed by a compression, and then all laws will change. So regularities and trends, shown and described in persisting monograph equitable only within the framework of the called analysis. Hierarchy of the paradigms and their effects are brought in Fig. 2.41.



Fig. 2.4.1. The hierarchy of the paradigms and their effects.

In the base of the hierarchy building two unbound axiomatic paradigms are layed. The paradigm of the wholeness and the paradigm of the global variability. The wholeness is not an effect of a variability. (The wholeness can be without the variability). Changes can be in not holistic world too.

An isolatness is an effect of the wholeness. If the Universe is not insulated, that part of its matter can "go out" of its limits. The loss of a part will break the wholeness.

The **laws of the conservation** can be kept only in the insulated and variable Universe. Any changes effects of the motion. In the insulated Universe a motion can not leave "outward".

The spottiness is an effect of the wholeness and the variability. The wholeness can be also realized in lumpy ambiences. It is difficult to imagine the variability in a uniform ambience, that is for variability spottiness is necessary. The spottiness is an attributic manifestation of information (the
section 1.8). The spottiness reveals in the form of the Universe structures discrete and nonlinearing processes.

The **Universe system** is the effect of the wholeness and discrete. We shall remind the notion. The system consists of elements (discrete) and relationships. The system is always discrete, lumpy and holistic.

Organization is also a system characteristic. Organization means a presence of the certain order. The organization must exist enough long, not forfeiting its own main functions in order to be noticed by a watcher. Consequently, in organizations the processes of the maintenance to functional stability on the background of the volatile World must run.

Self-organization and controlling are a mechanisms of the organization conservation, homeostazis. The conservative processes support steadness, stability, inertia. The evolution (homeokinez) occurs under the influence of adaptation mechanisms at impossibility to save homeostazis.

Variability in a discrete world can occur in the way of elements integration or their dezintegration (division on more small parts).

The **hierarchical integration** presents by itself a building of a system with the reason of improvement its operation. The integration is realized by a displacement and an association of parts into integer, this process is possible to name a combination of material, energy, information (MEI). The anarchistic integration is an association of homologics rows by means of horizontal relationships. Biosphere, lithosphere, organism, human society are anarchistic systems.

Dizintegration - disinteration of the integer into parts, training to the following integration of a parts in integer.

All enumerated above notions are closely interconnected. The most generalising notions (in "fat" rectangle) are situated in higher part fig. 2.4.1. These paradigms are postulated and is not an object of thiis work. The other notions are considered in the following chapters. The paradigm about three-unity of material, energy, information flows obliges to consider the evolution not only with a standpoint of the structured conversions, but also take into consideration evolution of the energy and information.

Previously before beginnig the study of invariant developments, it is necessary to build the model of the world substratum, which must meet the demands of the wholeness, the isolation, the difference, the variability, the evolutionism (the model of substratum is developed in chapter 4.3).

The effect of the Universe isolation can be a conclusion that the energy is capable "rolls" from one level on another, **so moving of the macrocosm can be realized only to account of the macrocosm energy.**

The substratum is primary, and macrocosm is secondary, so an observed global evolutionism at the wholeness of the World must occur not on observed by a person level only, but at a rate of substratum also.

The conversions of substratum "pulled" after themselves secondary processes, which is accepted to name the evolution. The transformation of the world structures, named evolution, is an adaptation of the world substratum expansion.

In the pulsing Universe it can not be stationarity, so energy, free from substratum, disperses on the maintenance of the firm imbalance beside newly formed structures. The evolution is assigned by a trend of the substratum development. The trend to the integration (rather not to disinteration) of the world structures is defined by directivity of the processes, running in substratum.

Nicshe [101] has an idea about determination of the processes from future: "From future wind unmarked winnows". From our point of view this "wind" are processes, running not in future, but in substratum.

Since the problem of the study is explication of the development invariants (normallities, acting on all hierarchical levels), so following chapters must include the knowledge, got on an atomic - molecular level, at a rate of organism community and on the mental level. Emphases is spared regularity on the development of the human socium (technosphere, policy, economics, ethnology).

Conclusion.

1. The evolution at the wholeness of the World must occur not only on observed by a person level, but at a rate of substratum also.

2. Moving of the macrocosm can be realized only to account of the energy freed from the substratum.

3. The transformation of the world structures, named the evolution, is an adaptation to the world substratum expantion.

3.0. SELF-ORGANIZING AND CONTROLLIG.

3.1. Highways of development.

In the previous chapters the idea that observable evolutionary processes, are caused not by mythical aspiration to growth of complexity, and grow out adaptive properties of the nature was proved. Dynamics of the World denies the out-of-date representations about stability and stationerity. It is possible to speak only about delay and acceleration of variability of life cycles organizings. Some objects change slowly enough, and the consciousness has time to identify them in the form of model. Such models can be named world structures. On fig. 3.1.1 the dependence of duration of life cycles (LC) objects of a different level of complexity from their evolutionary "age" is shown.



Fig.3.1.1. Evolution of various organizings stability.

Stability of lifeless systems is defined by durability of internal connections. For example, atoms exist billions years. Molecules, being more dynamical and mobile systems, arise and break up during chemical transformations. Macromolecules are less steady in comparison with monomeasures. The minimum of stability settles down in the field of albuminous molecules since they are the largest three-dimensional polymeric circuits (DNA is much longer molecule). All alive is constructed of albuminous molecules - a material very fragile, but labile, appeared by the most suitable for evolution.

Stability of alive systems is realized not so much through durability of connections, but through the ability to regeneration (self-restoration). It is possible to build a construction of very strong elements, but it is possible to build it from "weak", but easily replaced elements, and the construction also will be durable, under condition of periodic replacement of «the weakened parts». Such way of preservation of stability was selected with a life (the right branch of a curve fig.3.1.1). However regeneration demands purposeful actions (revealing of defects and duly "repair"). In social sphere this process is called management.

It is difficult to apply classical understanding of stability which means returning system in an initial condition after an output from balance to alive systems. Complex systems have no conditions of stable equilibrium, and constantly drift in a attractor zone. Alive systems show resistance to negative influence by means of reorganization of the processes and structures. Besides alive systems may not resist to external influences if the last are favorable. After the termination of external influence (it does never real stop) the alive systems comes back to a semblance of former balance. "Stability" of alive systems is more correct to characterize by the concept "life cycle". The longler LC, the more stability the object.

Adaptation of alive substance means proper responses to concrete external influence. At the big variety of external influences the mistake in a choice of reaction can appear "fatal". It is necessary to assume therefore, that there is a mechanism not a casual choice since at casual search of variants search of the adequate decision can be tightened for inadmissible time. We shall consider a problem of a choice with reference to alive organisms.

The fact of evolution of alive organisms is shown in changes of soma and variations of behaviour, but all to these external changes are preceded with changes in henom. It is considered that within the limits of a population as a result of crossing by a gene it is averaged [140, 135, 219]. Horizontal combinations of genes have a casual character. If to wait, when casual combinations (mutation) adequate to an inhabitancy collect, millions years will be required. Even bacteria which life cycle makes tens minutes, have spent 1,5 billion years for casual combinations of genes that there were metaphytes. Life cycle of the highest animals is estimated in tens years, therefore duration of their evolution at stochastic processes can surpass the age of biosphere.

On a background of decrease in rates of duplication it is possible to explain acceleration of evolution to that new growths arise not only during casual sexual crossing in summary purposeful combination theory of genes of a population. The successful innovation survives, is fixed in a population. The opportunity to combine the genes a trunk cell shows which can turn to any of 200 types of cells of a person organism.

S.Mejen considered as the organic law of evolution a transformation of variety. «Attributes and system of their variety are not inherited». Evolution is a reshuffle and distribution of already existing genes [143.] Vorontsov N.N. sums up long-term researches: « ... casual character of mutational variability does not contradict an opportunity of existence certain canalizing ways of the evolution arising as result of the last history of a kind » [219].

So, the mechanism of a purposeful combination of the genetic information "is calculated". The material for combinations is taken not only from a genetic memory of a population, but also from deep layers of a genetic memory of a separate organism.

In a science almost 100 years a dispute on an orientation of evolution is conducted. The facts (not popular) are known, that changes of an environment nevertheless influence on the process of mutagenes. In 1988 J.Keyris has found out, that except for casual mutations were also such which were formed in reply to the external factor [11]. Examples of stress influence on a mutation when stressful situations influence on a hormonal background of an organism are known, and hormones change quantity of mutations and change their character. It is known also «teaching» of genetic systems [224]. American genetic R.Harris with co-authors has found out, that under the influence of an environment the necessary changes occur. E.Mayer approved: "Each group of animals is predisposed to variability of one structures and to surprising stability of others" [135]. D.Bom admits the similar point of view. «Genes actually change, while before affirmed, that they change only casually. Hence, all the way long lives can influence on genetic structure».

Development often goes within the limits of earlier selected corridor, the principle «I develop what I have» works. If the choice was casual there wouldn't be such stability of attributes within the limits of the certain kind. The supporter of an orientation of evolution (nomogeneze) was also our compatriot Lyubishchev A.A. [128]. However there are convinced supporters of orthodox darvinism [139].

Gene of alive organisms contains not only the genes defining morphology, but also genes of behaviour. It is considered that many behavioural reactions of animals are genetically predetermined. Yung K. has found out congenital archetypes in people's behaviour [243]. Newborn creatures are able to adapt effectively for an environment almost without training. Most likely, it is a result of "storing" at a genetic level of repeatedly repeating life experience of ancestors. Dogs are not afraid of fire, without training go to a fire, but their genetic ancestors - wolves panically are afraid of it. On such "training" dogs needed less than 100 thousand years. The same it is possible to tell about behaviour of other domestic animals which have got the inherited behavioural functions not peculiar to their wild ancestors [69, 70]. The mechanism of fixation of life experience in genes is not known, but hormonal influence on it is established.

In connection with the developed concept it is possible to carry an evolutionary number of mechanisms of management: a reflection, self-preservation, inertia, Le-Shatalie principle. It is remarkable, that Kepler has defined the term "inertia" as «a resistance to a change». In sociology it is possible more often to meet a concept "conservatism", and in biology - "self-preservation". It is obvious, that the essence of these processes is identical, namely: the aspiration (unsuccessful) to avoid changes. In the nature there are no objects in which self-preservation is absent, in another way they would not exist. Inertia brakes, but does not protect objects from "slipping" in a stream of the evolution, from a mismatch of parameters of objects and an environment. Nothing can resist a pressure of evolutionary movement of a substratum, also as inertia of weight does not interfere with moving of a body, but only slows down process (negative acceleration). Conservatism of behaviour of alive objects does not stop a progress. So, the sense of progress clears up.

Progress represents homeocines, directed on a self-preservation of system functions. For people progress consists in maintenance with resources, protection against influence of "element", struggle against illnesses, prolongation of a life, increase of their comfort.

In the biosphere evolution worked in the same direction, improving life-support systems. Therefore LC of biosphere for 4 billion years of the stable Sun has not left yet on a stage of stagnation.

Stability of biosphere in an essential degree is supported through the mechanism of duplication. It is a very effective mechanism of adaptation. As an example the microorganisms which are made multiple copies in a geometrical progression can serve. The "monocelled" biosphere existed 1.5 billion years and till now a role monocelled is huge. In space accidents (consequence of dynamics of a world substratum) will be lost multicellular, but the elementary can be kept [183]. However on a background of a discussed hypothesis it is necessary to explain, why nevertheless in development biots the trend of decrease in rates of duplication, increase of a role of reasonable, operated systems is looked through. The possible answer consists in the following.

Reasonable systems possess the ability of "advancing reflection». They aspire to anticipate the future negative influences of an environment. For this purpose it is necessary "to know" laws of development and to consider them. The mankind notices negative changes in ecosystems, works on a problem of their neutralization (unsuccessfully yet). Even bacteria are not capable to sustain an overheat at the future transformation of the Sun into the red giant (through 5 billion years), therefore it will be the end to biosphere if the way of its resettlement in less dangerous areas of the Universe is not be invented". Problems of such scale are accessible only to mighty reason, bacteria can't do it. Therefore the biosphere improves mechanisms of self-preservation, including, and from the future space accidents, choosing a way of the reason, a way of an operated rescue.

It is not necessary to think, that the early biogeosphere expected the future end and consequently "has started" development of reason. The reason that mechanisms of development of a substratum are directed on reduction of a stochastic processes role and increase of a self-organizing role.

For example, at cooling substance (the Universe is cooled) there are phase transformations into sequences: gas - a liquid - a crystal. In the same number orderliness of movement of molecules of substance raises. Set of chaotic movements "are integrated" into some generalized action. For example, chaotic movement of gas molecules is shown as a pressure upon walls of a vessel. Some set of stochastic forms of movement can "merge" in the organized stream. For example, jets of a rain borrow all volume of air. On the ground water gathers in streamlets. Streamlets flow down in the rivers. The rivers converge at ocean. Streams wash out to themselves of a trench, the rivers - channels, reducing probability diffusion растекания. This process illustrates self-organizing. For this reason the nervous system is more localized, than humoral (more ancient). System communications in an organism are more «rigid», than in flight.

So, there are bases to consider management of the natural phenomenon which is beyond cleanly human activity.

Conclusions.

1. Management is the natural phenomenon which is beyond cleanly human activity.

2. Stability of alive systems is realized not so much through durability of communications, then through ability to regeneration (self-restoration).

3. Adaptation of alive substance means a choice of proper response to concrete external influence. Reaction is connected with reorganization of internal processes.

4. Progress represents homeocines, directed on self-preservation of system.

5. The main function of management in alive systems is regeneration of the worn out elements with the purpose of maintenance LC.

3.2. A phenomenon of control.

Previous researches lead to an idea, that adaptable processes are purposeful. There is a problem of a substantiation of the given idea.

The theory of control created mainly for human systems, is represented as an interdisciplinary science about rational achievements of some system purposes. For example, management of the personnel, the finance,the investments, the army, the market, the state, the technical systems [44, 45, 48, 182]. Ideas of control extend on other scientific disciplines (biology, genetics, ecology, the theory of evolution, psychology, pedagogics, political science, etc.). Biologists see controling in all alive systems. Cybernetics have found out a generality in controling of biosystems and automatic devices [44, 45].

In practice mechanisms of control are studied by the different, practically isolated from each other, scientific disciplines. Experts use the "branch" terminology and concepts, often not noticing, that speak in different languages about the same. There is a pressing need in ordering system of knowledge, data of plurality to invariants. «The most radical means of overcoming of stereotypes is introduction of a modern language and construction on its basis the general criteria » [103].

It is considered that the original integrator of knowledge of management was the cybernetics (1940-1950). However enthusiasm for idea « a black box which internal device the nobility is not necessarily, has braked development of cybernetics. In many cases at modelling situations without this knowledge is not managed [132]. Besides the cybernetics has taken a great interest in research of information streams, thus the thing - power essence of systems was ignored [102].

On the contrary, long before cybernetics (in 1912), our compatriot A.L.Bogdanov [30] has created a general organizational science on the basis of natural sciences and dynamics of human society. He has comprehended the phenomenon which now refers to "feedback". «Tectologics» became the first attempt in the history of science to give the regular formulation of the organization operating principles in alive and lifeless systems. It has anticipated a conceptual structure of the general theory of systems of Ludwig fon Bertalafny. Besides it contained some important ideas which have been formulated four decades later by N.Wiener and R.Eshbi in an other language. These ideas became the key principles of cybernetics [92.] A.Bogdanov and cybernetics studied only an applied part of a control phenomenon (experience of mankind ~200 thousand years), but experience of biosphere in processes of selforganizing was improved almost 4 billion years, hence, it is necessary for control experts to study experience of self-organizing of the World more widely. It is necessary for development of the concept mankind's coevolution in the biosphere structure. For a consensus of mankind and biosphere it is necessary to develop the general, uniform algorithms of control and to make use of experience of the nature. The cybernetics studied the control experience of biosphere, but only from the positions of homeostatics. In the long term ripe problems of homeocynetic ripe.

Hopes which contacted with cybernetics, are now assigned to synergetrics. The school of construction of complex operated technical systems is known (prof. Kolesnikov A.A.) which successfully uses natural technologies of self-organizing. The problem of carring laws of natural cynergetic processes on technical operated systems is put. Processes of the directed self-organizing of control systems are created.



Fig. 3.2.1. The generalized model of controling. OM - object of management. OS - an operating subsystem. F - the information filter.

Let's consider the basic achievements of the theory. On fig. 3.2.1 the universal cybernetic scheme of **control** [1] is presented. Constant attributes of all control systems are:

• The closed nonlinear channel - a conductor of streams of substance, energy, the information (SEI) (fat arrows).

• The channel possesses ability to filter information (F), to remember the information to spend SEI streams lengthways and to interfere with their diffusion for limits of the channel.

• The contour in any sites can have connections with an environment.

• The most concentrated SEI stream (streams) from an environment name "Input".

• The most concentrated SEI stream (streams) from a contour in an environment name "Output".

• The overall objective of a system is preservation of the functions.

• Adaptation of a contour is carried out by means of reorganization internal and an environment (homeocines).

• Stimulus to adaptation are the mismatch (disharmony) of a condition of internal and external parameters.

On fig. 3.2.1 the control system with two contours $(OS_1 \text{ and } OS_2)$ is shown, but the last can be more. The maximum subsystem of control (OS_2) dominates over the lowest (OS_1) . The subsystem of control can contain separate blocks of acceptance and execution of decisions. The bottom control centres are limited by the decision of "internal" problems, proceeding from resources available in the center. Top levels are focused, besides and on an environment. They operate as subsystems, and abovesystems, connect external resources for the decision of the organization problems. The openness of system is realized by top levels of control. The control is more perfect, the more effectively it influences on the environment (an example is the mankind).

Cybernetic S. Bir has developed the model of viable firm reminding the scheme of the control in alive organisms [26]. The system has five hierarchical levels of **control**. Each level has «contractual powers» about the autonomy and works in borders of its competence.

At control systems there are filters "F" which eliminate the useless information. At any operated system in the structure of a SEI contour there should be a block of a "genetic" memory where algorithms of development and reaction of system to external influences are stored. In the elementary systems memory can be distributed on the all contour. In biological objects the block of memory was allocated in a specialized subsystem of genetic programs of behaviour (DNA) which is transferred by right of succession. In technical systems the programs of behaviour are set by the designer (a person). A 3.2.1 model resulted in figure is a homeostat and is not capable to work in a mode of.

All operated parameters make fluctuations in an attractor zone in connection with the inertia of control mechanisms. Fluctuations are a necessary element of mechanisms of self-organizing of very complex natural systems.

The resulted "classical" scheme is a special case of control which simply models processes ontogenes of an organism (i.e. from birth to death). The matter is that the second contour accumulating collective experience, almost completely disappears together with the death of an organism. Descendants receive at a birth only genetic memory. All rest should be got during ontogenes as a result of training. Nevertheless, life experience of an organism does not disappear completely after the death, and is partially stored in memory of society and even in genes (see chapter 7). Each new born organism, having inherited luggage of genetic memory, is connected to bank of a social memory. Carriers of social memory are brains of animals, and at the person the information which has been written down on technogenic carriers (a paper, magnetic materials, photographic materials, etc.) is added.

The information of a brain does not vanish after death owing to integration with a society (population). It can disappear only at full destruction of all kinds of alive essences. On fig. 3.2.1 there is a block of a social memory.

Let's consider the block of social memory in the environment of bacteria. There is a set of ways of transfer of the genetic information from one bacterium to another (trusduction, sexduction) [203, 31, 206]. A gene of a colony is collective bank of the information. "Monocelled" can exchange the electromagnetic information [226]. Besides carriers of fragments of DNA between cells can be viruses [136, 138]. Presence of the general bank of genes has developed programs its preservations (altruism).

So, during our research one more time a role of memory (a version of the operative information) is designated. In chapter 2 it was already discussed, that the knowledge of the World, perception of time and space the person are impossible without presence of memory. It is obvious, that **control** and self-organizing at all levels also are impossible without MEMORY.

Proceeding from a continuity of evolution, it is possible to assume, as lifeless objects have the attributive memory distributed in a substratum. The idea of existence of the world memory curtailed in apeiron, belongs to Anaksimandr (Ancient Greece).

Let's track evolution of structures of memory. The main carrier of the attributive information (heterogeneity) is the world substratum. The greatest philosophers of an antiquity intuitively guessed it. In it programs (memory) of development of the Universe "are sewn up".

Further there were elements of memory of a microcosm and lifeless substance. Memory of alive substance at the beginning was fixed on albuminous molecules and polynucleinic acids (DNA, RNA). Then there was a memory reflected in congestions of neirons (a brain, gangles). And, at last, - memory, on inorganic carriers of the different nature, as a component of a technosphere. Darvin's heredity also is display of a phenomenon of memory, it can be seen in the lifeless nature too. Molecules store memory of the atoms which have created them. Mountain sedimentary breeds store memory of the last geological epoch. Perhaps, it is possible to find the structures storing memories of evolutionary predecessors in alive cells.

During memory evolution of alive and reasonable systems the information has got an alarm character. The signal represents the information code starting the program of reading the information from a memory of the receiver. It is meant, that the receiver of the information contains in itself data, knowledge of the maintenance of a signal. For example, the red rocket is a signal of the attack beginning. Signs of a traffic are the coded information. The nervous impulse does not bear the information of the pain reason, but is a command to draw aside, for example, a hand.

Any carrier of the operative information can repeatedly cooperate with other objects and fields. The operative information is fixed on the carrier in the form of heterogeneous which do not destroy primary structure of the carrier but only slightly it modify. Otherwise the carrier would be destroyed. For example, on a magnetic tape record heterogeneous in the form of magnetization concerns a thin ferromagnetic layer.

Accumulation of the operative information occurs not additive. The part of the information received at earlier stages of interaction "is noisy", therefore in organisms the technologies interfering «making noise» take place. This role is carried out with the elements of memory possessing in the big capacity and flexibility, for example, of a congestion of nervous cells (brain) and electronic databanks. In technical systems the problem is solved in such a manner that on a magnetic tape each new portion of the information is fixed on "pure" sites of a film.

There are ways of "scheduling" the information. In libraries books are stored on different shelves, there are dividing catalogues, writing is conducted on different pages. Broadcasts "are quickly stored" on the air and divided on frequencies. It is possible to assume, that the life has arisen in connection with the there was a capacious albuminous memory. On which the information is transferred, can consider as the block of a shortterm memory. For example, the stock of resources (warehouse) can be not only at the enterprise, but also in the car of a train (a mobile warehouse). The light signals going from far galaxies billions of years, are memory of the last condition of galaxies. In this case the keeper and the carrier of electromagnetic information (light) are photons. So, memory represents storehouse of not mixing up operative information on any material carriers.

Conclusions.

1. Control and self-organizing at all levels are impossible without MEMORY.

2. Control systems are always hierarhicle. Highest levels are focused on the control of an environment. The lowest levels operate own process of homeocines. If the lowest levels do not consult with the functions they are supplemented with "maximum".

3. **Control** limits a variety of conditions of a system, promotes a purposeful choice of adaptive reactions, accelerates a development.

3.3. Control in a lifeless matter?

Developing the point of view on the global evolution which is starting with bowels of a world substratum, is expedient to look for "roots" of a phenomenon of **control** at a level of a lifeless matter.

Invariant attributes of operated systems are above designated and the main thing from them puts a contour of the return and direct communications (circulation SEI of a stream on the closed way). Contour of SEI can provide steady LC at simple inorganic systems too. It is enough to recollect atmospheric whirlwinds which weeks keep the structure. Vortical circulation of a cloak of the Earth, galactic spiral structures, a "planetary" movement of electrons in atom, a movement of planets. Examples of organized convective streams (Bernar's cells) [101] are classical. So, the vortical structure stabilizes many alive and lifeless systems. Control systems with planimetric a SEI stream serve the similar purposes.

Vortical SEI streams in lifeless substance are not differentiated, and consequently in them it is impossible to allocate "legislator" and "executor", but there is a prepotent rhythm coherent movement, generation of some function, hence, is made.

It is difficult to establish the beginning of differentiation and specialization of "administrative" structures. Quarks in nucleons are not so equal in rights, unlike. All protons in kernels are considered equivalent, though conditions of existence of protons in the center of a kernel and on periphery, most likely, different.

Occurrence of atoms has marked the beginning of the "epoch" of differentiation and centralization. An atom is an association of obviously unequal components. The kernel is the center around of which electrons are united. The kernel creates the electromagnetic field keeping electrons. Electrons can change orbits, come off a kernel. In an orbit electrons "are smeared". Their finding in this or that area is likelihood. The kernel yet is not control centre, but it dominants, it is the hierarch. While the kernel exists, the atom can be formed.

An atom possesses the ability "to remember" the last events. Under influence of an external electromagnetic field electron can "pass" to a higher orbit and there is on it a certain time, that is to remember an influence. Returning of electron into the stable orbit is accompanied by radiation of energy quantum and is a reaction to external influence. This property of atoms presently is used for construction of logic elements of type « yes - no », entering in systems of an artificial intellect [126].

An atom absorbs not any quantum of electromagnetic radiation (a source of information), but that only corresponds to the energy of electron transition into the maximum orbit. Here we see a principle of a filtration of the information which is widely used in all human operating systems. Reactions of atom to external influences are determined and rather predicted. The environment can influence as on a kernel of atom (a nuclear magnetic resonance), and on its electrons. As the factor of indignation is the environment which induces atom to make reciprocal actions.

Atoms are capable to cooperate, forming molecular connections. Atoms are capable to maintain long "impact" of an environment, keeping their homeostasis. During "a life" they can form even more complex and more various connections. For atom not only the next atoms is an environment, but also vacuum structures through which feedback can become isolated. To present the scheme of these feedback it is not obviously possible yet since the structure of a physical vacuum is not understood yet. In chapter 4 the hypothesis about structure of a vacuum substratum is developed.

Between an environment and the molecular unit there is an exchange of energy and the information. For example, the quantum of light can be absorbed by a molecule, transform it in the raised condition. After a while the molecule returns quantum of another frequency in an environment. Molecules break up to fragments ("die") and from fragments arise again ("birth"). This process is equilibrium. And these reactions are statistically predicted. Differently molecular reactions are determined.

At a mixture of molecules of a different structure between them the chemical interactions changing structure of a mix begin. Development of a mix in time reminds ontogenese of alive creatures. Spontaneous process is directed on partial reduction of internal energy and growth of entropy (i.e. to death). External influences cause the reactions of molecular systems directed on indemnification of this influence (Le – Shatelie principle). At presence of an external energy source in molecular mixes oscillatory chemical reactions (Belousov – Zhabotinski reactions) [75] can proceed. Hence, molecular systems are capable to react to external influence, to exchange energy and the information with environment, to try to stabilize the internal organization and the form, i.e. they are capable to self-organizing.

Is it possible to see «shoots» of control at this level? In a human understanding with all attributes listed above – it is not. For control is the process including certain set of factors. If any factor is absent, control is not realized.

Factors, which combination generates control, exist in the isolated kind and at an elementary level of a matter. For example, if in the sated solution salt the slice of a crystal of the same salt there will be a purposeful process of transition of salt of a solution on a crystal will get. The crystal will grow, and in a solution concentration will decrease, there will not come yet balance. The dominating element (crystal) which the presence has imposed to system the certain behaviour "works" here. Imagine the analogy. In a human collective there was an informal, charismatic leader who with the charm in himself involves people. Around the leader there can be an informal group incorporated by the general interests. The group will grow, increase in number, up to a balance comes, and growth stops.

Let's consider other example resulted by A.Bogdanovym [30]. If a drop of water to place in the sated pairs water it begins "to draw" molecules from pair and to grow, increasing the volume. When the size and weight of a drop will exceed durability of its environment the drop will break up on two approximately equal parts. Further a process of duplication will proceed in a geometrical progression. Duplication of a drop on a way differs from duplication, for example, bacteria, but on the fact is nevertheless duplication. In a system « steam - liquid » the drop is dominant, setting an orientation of the processes reducing stochasticity.

Let's consider, what elements of management can be seen in molecular systems.

1. Information interchange with an environment and between internal elements.

2. Homeostatic processes of self-regulation.

3. Division of functions between elements. Boundary molecules on a surface of a drop keep it from disintegration. Boundary layers of molecules on a surface of a crystal provide its growth. There are dominating subsystems (the centers of condensation and crystallization). Functions of border differ from functions of volume.

4. Counteraction to external influences (principle le -Shatelie).

5. Self-preservation with elements of duplication.

6. Presence of memory. Water remembers influence of magnetic fields. Crystals of ferromagnetic materials are used by people as elements of computers memory for information record on magnetic tapes, disks and so on. Some alloys possess memory of the form. After deformation and at the subsequent heating the body restores former forms.

7. Reception and processing of the information. Electromagnetic and thermal radiations are grasped and reradiated in other frequency range.

8. Regeneration of subsystems. In crystals there is "a treatment" of defects.

9. The filtration of information (not every quantums are absorbed). Any copy always contains less information, than the original.

However in molecular systems there is no precise differentiation of subsystems. Functions of the receiver, the compiler and the transmitter of the information are not divided. There is no a specialized control centre. Self-organizing prevails. The memory size is small, one is remembered only an influence (for example, a magnetic hysteresis), but not sequence of influences. Reactions to external influences are determined, their quantity is not enough (deformation, reorganization of structure, radiation of quantums of energy). Advancing reflection is absent. **High-molecular connections** possess almost all previous properties. As a result of the invironment influence on these properties ability to change spatial conformations increases. Polymers can be used as elements of memory too. Liquid crystals thin react by reorganization of structure to change of the temperature, influence of electric and magnetic fields. Highmolecular connections are capable to facilitate a conjugation of different structures, operating as "glue".

According to Oparin a life has arisen during the evolution of fat-like drops (emultions, lipids) in water. Every possible bubbles (foams), emultions, collids, mitzells have appeard. All these formations are capable to grow, be made multiple copies, structured. Environment was differentiated more and more. Thus, preconditions for occurrence of control in that understanding which is accepted by people were created. For this purpose in one structure should gather all the elements necessary for realization of control.

At least, the alive cell represents a structure in which the control system already functions. It is not excluded, that control can be seen even at a level of the organization of albuminous molecules. It is known, that fermentative properties of fibers are connected not so much with their linear molecular structure, but more with spatial conformations.

Synthesis of fiber is carried out in ribosomes. At the beginning the primary (linear) structure of fiber formed which then, by twisting with very high reproducibility, gets necessary spatial conformations. To present incredibility of such event during casual processes, we shall consider a following example.

Let's admit, somebody throws a long cord on the ground and each time a cord develops in a word "management". The probability of such event is insignificant, but the albuminous molecule makes this trick with tremendous repeatability. It is impossible to explain such phenomenon as an accident. Process of structurization is promoted by special albuminous molecules.

It is not necessary to forget, that all objects of our world are connected with the world substratum, therefore full independence does not exist. The information about movement of any atom is transferred to the next atoms. Through a substrat network there can be contours of the feedback, being a basis of self-organizing and control. So, if control is precisely identified on highest levels of a matter, that, obviously, this fact has been stipulated" in a substratum. Evolution in a potentiality "is sewn up" in the attributive information of a substratum. We observe a process of its macroscopical deployment. It is possible to assume, that the block of collective memory is available in all without exception natural objects since the information, memory, "software" of evolutionary processes is in a fundamental principle of the World, in a network substratum.

Conclusions.

1. Atom - molecular units have many functions similar to functions of control in alive systems: aspiration to expansion, counteraction to external influences, aspiration to stability with elements of duplication, presence of memory, reception and processing of the information, ability to regeneration, a filtration of the information.

2. There are essential differences between alive and lifeless substance. In lifeless there is no precise differentiation of subsystems. Functions of the receiver, the compiler and the transmitter of the information are not divided. There is no dominating control centre. Memory is "short". One influence, instead of their sequence is remembered only. Reactions to external influences are determined (principle Le - Shatelie).

3. Very complex systems without control are not capable to exist, therefore control systems are as much as possible protected from destruction.

4. Evolution of control systems is directed on expansion of a range of existence and decrease in dependence on an inhabitancy.

5. The Information, memory, "software" of evolutionary processes is sewn up in a fundamental principle of the World, in a network substratum.

6. There is an evolutionary number of memory: substratum memory - memory of lifeless substance - memory of a cellular level – an organism memory level - memory technogenic.

3.4. Control and self-organizing.

As it was marked above, control means the actions directing a system on the achievement of some purpose, on selection of the necessary trajectories of movement. It is possible to find in operated systems constant (persystent) a subsystem which term of existence is commensurable with a life cycle of the organization (for example, a cell, an organism, a state, a firm, an enterprise). In a human society leaders can be replaced, but the operating center is kept for a long time. In any regulators there are always pauses between operating influences. Pauses are necessary for decision-making on necessity of influence.

However in the nature there are objects stably developing, adapting, but it is very difficult to isolate a prepotent subsystem in them. Such systems are, for example, colonies of bacteria [157], biozenoses and, at last, all biosphere. It is possible to carry mankind to the same class as a whole.

In this case stochastic control takes place. The operating centers appear unexpectedly, carry out influence on system and disappear, replace each other or operate simultaneously, as soloists in a jazz. All executors coordinate actions with them.

A stream of cars on a road self-organizes, following very simple rules. The basic purpose of all participants of the movement is one - to reach without failure, therefore maneuver of everyone causes "security" maneuvers of partners on the movement. Everyone becomes "a king for a day". Continuously arise and break up the contours of control. Everyone can be the leader and the satellite at the same time. Maneuvers are made by turns (solo) or simultaneously (ensemble). The task of other participants to answer maneuvers of time leaders by the maneuvers providing traffic safety.

The originality of self-organizing consists in a short life cycle of the individual leader and a small set of programs of behaviour. Some algorithms are enough for an automobile stream: forward, back, stop, to the left, the right. If the next participant of the movement will submit a signal not clear to others, there will come an accident. So, fast or imperceptible for the observer change of control elements is estimated as self-organizing. Stohastism is included in unpredictability of the leader occurrence.

In self - organizing systems administrative impulses are essentially shorter, than pauses between them. In pauses the system remembers operating influence.

Self-organizing can proceed as a struggle (egoism) and as a cooperation (altruism), Self-organizing of an automobile stream goes for the blessing of all participants, but self-organizing of the economic market

is egoistic. Everyone aspire to break competitors and to become a monopolist.

Between persystent control and stochastic self-organizing a number of intermediate conditions are located. As one of «persystent» characteristics control parity can serve a parity $P = T_{con}/T_{life}$, where T_{life} – a life cycle of a control system; T_{con} – a duration of the control certificate. The more close P to unit, the "more rigidly" the organization of a system. We shall consider an evolutionary dynamics of «P» (fig. 3.4.1).



Fig. 3.4.1. Dynamics of biosphere controllability. Increase of a colour density reflects the decrease of stohastism.

The cell is a high-organized object with a persistent control system (DNA, a kernel). The cell answers to external irritation by a movement. Amoebas are capable to feel heat, a touch. A cell adapts for constants irritatiors and ceases to react to them [215]. DNA of any cell contains programs of synthesis of the enzymes intended for "cutting" of the future defective genes (a prognostic function).

Monocelled make multiple copies, search for a forage, "escape" from dangers, adapt for an inhabitancy. The primary biosphere consisted only from procariots, but during evolution the quantity of microorganisms kinds has reached tens thousands. There were cells, specialized on the control (neirons) which are named by an organism in an organism, and possess «an advancing reflection» [10, 14, 15.] Neirons have congenital knowledge and are trained during ontogenes. A neiron reflects environment in view of the last experience. Activization of neiron depends on the purposes of behaviour. Reaction of neiron can change and disappear. It is possible to develop even a conditioned reflex in neiron[195].

Neirons sensor controls change the sensitivity influence of a brain. As soon as neiron satisfies its needs by metabolits of around cells, it stops to operate [206, 203]. It is not enough starting stimulus for adequate behaviour of neiron. Its action arises after training, at presence of motivation and corresponding conditions [229].

In a brain neirons are built in functional systems, and for this purpose acsons grow in them. Experience of a brain leads to a change of a connections network. Perhaps, for these reasons a neiron lives longer other cells?

Cells of immune system also are capable to remember their enemies. A trunk cell is transformed to any type of cells (there are about 200 types of cells in a person).

So, the unicell possesses a persistent control system that is shown on fig. by 3.4.1 high column with "dense" colour.

The first cells have appeared in the water environment, many live there now. Water possesses fluidity, therefore dense colonies of cells in water cannot be formed and cooperate by a principle of self-organizing.

Rates of duplication of cells are so great, that at once there was a community (population) of cells. A "water" population of unicells is stohastic.

The differentiation of cells is observed. There are cells-assistants, cells - the murderers rejecting cells with defects.

Cells on a firm substratum form colonies which are ordered more, than "floating" microorganisms. In colonies the certain order is found out. In a colony the care not only of themselves, but also of other members is shown. Between cells there are passes on which a feed acts in the center. It is analogue of a system altruism [119]. The mechanism of self-organizing of a colony is not known. Most likely, it is supervised by metabolits and the wave information [226]. It is possible to assume, that colonies are predecessors of organisms.

Colonies of cells exist millions years and till now play a great role in a biosphere of the Earth. Nearby 600 million years back some colonies of cells «grew» into metaphytes. The hydra is the transitive form between a colony and an organism. It is possible to disintegrate a hydra on cells, but after a while cells again will independently gather in an organism.

Amoebas show a high level of social interactions. When in territory of their dwelling does not remain forages, amoebas gather in a mass, reminding a grape slug (organomizet). There is a similarity of an organism from the identical cells, capable to move as a snail [157]. Synchronous

work of huge quantity of unicells surprises. Undoubtedly, there is an information interchange, there are signals of management. Whether however the control centre is formed in this community or it is amazing self-organizing, we do not know. If it is necessary organomizet breaks up to separate microorganisms. So, **stochastic self-management can be seen at a level of colonies of monocelled essences.**

Unlike beyond all bounds growing colonies, in an organism any organ carries out growth in the certain limits. In organisms cells, specialized (sensor controls) on reception, transfer (neirons) and processing (nerve ganglions) of signals were allocated. To a chemical and wave way of the information transfer the electric way (nerves) was added.

Evolution of organisms complicated and improved control systems, the nervous system, a brain developed. A centralized persystent management has arisen. During evolution the brain was constantly improved.

If the factor of enzifalisation to express as the attitude of weight of a brain to weight of a body the following evolutionary picture will turn out: fishes (age 400 million years) - 0,02 g/g; reptiles (300 million years) - 0,05; mammals (100 million years) - 0,15; birds (70 million years) - 0,18-0,3. These are the average figures. The highest factor of enzifalisation is in a person (0,77) and dolphins (0,54). Among birds "the brainiest" parrots (0,34) and varanes (0,3) have appeared [81]. Octopuses have the most developed brain among molluscs (very ancient organisms). During evolution development of animals brain is the certificate of increasing value of management in alive organisms. Management reduces stochastism of behaviour, promotes reduction of resourses expenses on a choice of a correct "decision".

So, **organisms have more rigid control system than, colonies monocelled**, that on fig. 3.4.1 is displayed by a high column.

Organisms are united in communities (populations, families, flights, biozenoses), Communities promote a survival of a kind. Duplication means a dialogue of different gender individuals.

Populations are organized by stochastic control, for example, the population of frogs, bears, etc. have no leader - the leader, but in some communities of animals cyclic control is observed. During migration lobsters move as the ordered column with the leader in the chapter. On places of constant dwelling the column breaks up. During flights of a bird

gather in a flight operated by the leader. But on nest places the control is cancelled, and there is a transition to self-organizing. Whether there were among reptiles ("dinosaurs") operated communities (flights)? It is possible to assume only, that such deposits at complex reptiles could appear, as their evolutionary followers - birds and mammals in the majority of flights have the leader.

Many hoofed animals have a constant (but replaced) leader. The flight submits to the general programs of behaviour that facilitates its existence, but the autonomy of an individual in flight is more, than at a cell in an organism. A member of a flight can separate from it.

The class of insects among which there are operated colonies (bees, ants, termites) is very various. At a level of self-organizing there were mushrooms, plants, spineless (molluscs), fishes, amphibious, some reptiles.

Biozenoses, the mankind, the biosphere while do without the constant leader. In opinion of Reimers, in biosphere animals since they are arranged more difficultly, than plants and insects [222] dominate and the influence will organize a life in biozenose. In the process of evolutionary «growing up» such systems can be differentiated with the advent of operating (prepotent) subsystems.

Among animals a person has reached the greatest development. The human flight (society) has management of the highest level of rigidity (a tribe, the state). But all mankind till now is poorly organized by a uniform control. In mankind technozenoses have appeared, with rather determined behaviour (without human management they cannot function).

The primitive person (still animal) began to render an active influence on the environment, the leader deposits were showed in him. At the present stage of the biosphere development a person tries coevolution with the biosphere, but in his interests. Artificial biozenoses, an agriculture testify to increase of the person influence on the biosphere. **So, in biosphere it is possible to allocate four objects with persystent control: bacteria, all organisms, (a person), technozenoses.**

A persystent control is more conservative, than stochastic one. A control always limits freedom of subsystems, assuming liability indefatigable regulation of homeocines processes. The more absolutely the control system, the less is stochastism, the adaptive reactions are faster.

Reflexes preceded conscious activity, they are easier, but faster. The trial and error method (stochastism) is called to insure mistakes of the determined decisions, carrying out search of new variants.

Control is capable to provide homeostasis only within the limits of some corridor of conditions. Pertinently to recollect, that in "Tectology" [30] this idea is formulated by A.Bogdanova in a concept «egression». Egression is a process of a "centre" occurrence structures (the government, authority, control) which raise stability of an organization. **So, stochastic processes "search" for new decisions, and operated fix them in the programs of behaviour.**

Not every corridor of development appears optimum in quickly changing environment. The output from a deadlock corridor a method of management is not always possible. Non-standard decisions are extracted by a trial and error method.

A person receives the information for decision-making from an inhabitancy by the human reason. The reason of the person is "fast", more adaptive, is a consequence of an evolution in «a corridor of reason» (zefalisation).

The lowest organisms receive the "fresh" information by means of drift of genes in the biosphere, sold by viruses or other mutagen reasons. However this way of transition in other corridor is accompanied by almost universal extinction of a former kind from illnesses (mutagen process) and development of a new kind from the remained mutants. It is necessary to pay for radical decisions dearly. Cuvie has named this phenomenon world accidents.

So, the biosphere reminds a puff pie from systems of different organization. Systems simultaneously coexist with low and high value «P». The combination of the order and chaos is observed. The chaos is a stochastic order. Probably, harmony of the world also consists in it. The trend of transition from stochastic control to persystent is observed.

The developed control systems get an opportunity to influence on the environment, start to operate flight, a population, biozenos, a stochastism reduction in social systems therefore is observed too.

It is necessary to pay attention, that natural control systems were created "from below". Controls should support balance of interests between executive divisions. Cells "delegated" powers to an operating element in the interests. In flights there is a struggle for leadership, but the leader exists until the flight agrees with him. Among people often happens on the contrary, servants become owners. Elements satisfy their needs through functions of the all system.

The operating subsystem aspires to provide its interests due to functioning of executive parts. The operating subsystem (the leader) always dominants also subordinates to itself the whole system. Struggle of egoistical interests of elements comes to the end with a consensus providing purposeful behaviour.

The process of differentiation of cells, organisms was preceded to an occurrence of persistent control centres. Even in a colony of bacteria there is no equality. Parts of the whole (system) are various on rate of a life, on the environment stability, on functions, compete among themselves for resources, and it can cause disintegration of a system [30]. Each subsystem "wishes" to receive more and to give less, and cannot concern to interests of others, as to own interests. Therefore for the organization of a consensus alive systems have created control systems.

Development of the alive organizations has demanded complication of control systems. The more different the behaviour is, the more various of specialized levels of management are.

According to the theory of systems, coordination of work from the general center demands a minimum of signals and is most economic, if control centres are hierarhic [203]. Highest levels of management liquidate "horizontal" conflicts between elements.

In the gregarious organization specialization is expressed less sharply. Each member of community is multipurpose, though there are leaders and satellites. There are strongly specialized societies among insects (ants, bees).

Cyclic control is a version of stochastic and percyctent. A difference consists in that the leader is put forward in necessary situations, acts the certain interval of time and withdraws after achievement of an object in view. For example, the leader of the bird's flights, the commander, a passionar person, the leader of an informal association, a conductor, the guide. Pauses between cycles of control can be long, seasonal or unperiodical.

There is another form of self-organizing among plants - suczession [183]. This is a display of ontogenes in biozenos. For example, sand grows with a grass. After there are bushes, behind bushes trees of the certain breeds and all comes to an end with an oak grove. Here the leader (a dominant) prepares a circuit of the future events, creating conditions for development of the new life form. Leaders replace each other. Instead of chaos relay race of continuity is realized.

Go-ahead control (suczession) is based on reflective interaction of leading and conducted parts. The leading part creates conditions favorable for existence conducted. The leader finishes his LC and his role passes to a former conducted part. Process repeatedly repeats, as in a multistage missile. The fulfilled section which has lifted a space vehicle on new height, is separated from a rocket, and work enters following. The similar scheme of achievement of the purpose has been realized in ancient Persia (mail on перекладных) and in Russia (coachmen).

The analogy can be seen in ontogenes. An embryo development represents the original «suczession» of cells. In the beginning nervous cells (brain) which lead a development of an organism are pawned. The known "dominoe principle" works.

History is a change of leading human cultures [205]. Parents transfer children elements of ethnic culture. Tzefalization of biosphere looks as a permanent change of leaders (animals), each time more and more "reasonable". The died out kinds of animals have provided the development of new ones. Colonies of microorganisms have created conditions for occurrence of organisms. Organisms have created basis for a gregarious way of life. Biospheres filogenez looks as a relay race of survival technologies transfer from parents system to affiliated systems.

Similar processes can be seen and in a lifeless matter. We shall consider a process of a crystal growth. The crystal grows a layer after a layer. The superficial layer defines a structure of the following stratification. Precisely so the pallet for transportation of eggs has the deepenings determining arrangements of eggs layers. The information (algorithm) of the packing order of the next layer of a primary substratum is transferred from a layer to a layer by go-ahead way. The stream of the information from the center to a surface of a growing crystal takes place. The described process allows to arise to system of a very big size, but thus the direct communication between the remote elements practically is absent. It is possible to break off a part of a crystal, but it will not break the order of an arrangement of atoms on other end.

In cybernetics it is shown, that in self - organizing objects control in the form of system of the subordinated algorithms [109] is a characteristic. Higher level of control (legislator) develops algorithms for bottom. During development the hierarchy of control grows, therefore, "legislative" functions are transferred the subsequent levels.

It is possible to note two variants of suctzession. In an example with a growing crystal a character of communications between ions (or atoms) does not change. The sizes of a crystal change only. However in alive evolutionary variability of communications becomes a rule. Biosphere filogenez consists in that descendants always differ from ancestors, owing to a combination of the genetic information of the parents. **The formed new hierarchical level becomes the organizer of the following.** Each new growth prepares conditions for occurrence of another. Descendants are not copies of parents, but keep their basic attributes.

Hypercycles of management. Each more complex level of control influences on an environment in greater degree. Actions of a cell, will passively transform an environment. Procariots transformed a primary atmosphere of the Earth for billion years, delivering oxygen in it [73]. Animals also transform an inhabitancy. Vernadsky in alive substance has seen mighty reconstruction force [39, 40]. A person has made a basis of the existence environment transformation. Young crustal structures of a brain learn the world around with the purpose to influence on it. Older subcrustal structures operate the homeostasis of an organism. The leader of a flight or animals forms a flight and organizes its interaction with an inhabitancy (migration, defense, an attack, etc.).

Target SEI the organization stream, dissipating in a continuous environment, inevitably comes back to an input (an echo - effect). If the signal of a feedback will overcome a threshold of sensitivity of system there will be a reflection (resonance). Ways of migration target SEI a stream in a subsystem is difficult to track, therefore, when « the boomerang comes back » it is perceived as a destiny. As a result the system which has sent a signal, should adapt not only for trends of the world development, but also to results of the vigorous activity, an echo responded in a "jungle" of world structures. If "echo" is characterized by a positive feedback it can lead to a succession of events. We shall consider the scheme of such event (fig. 3.4.2). Some signal starts a circuit of transformations, evolutionary of some (I - II - III - X) there will be no yet organization X, capable to close a contour of a positive feedback and then all system starts to generate a new quality. In cybernetics such processes were not investigated. In sight of cybernetics were interactions between ready (static) units, blocks, structures joined. The cybernetics was not interested in evolution. We shall result real examples of existence of such events.



Fig.3.4.2. Chain process with a positive feedback.

It is known, that crystals represent a very steady form of substance existence in the Universe. Our compatriot Fedorov has shown, that at all variety of minerals there are only 230 types of crystal forms. From the moment of the Earth formation, and may be formation of other space objects, crystals do not evolution. It is a deadlock branch of the Universe evolution, "frozen" by a high order.

But evolutionary processes have not let alone crystals too. An evolutionary number: molecules - fibers - a cell - an organism - a person has developed up to such degree that has managed to affect development of crystals. Inert, too correct crystals of silicon, german under an influence of a person have turned into "defective" crystals (elements of chaos are entered into a structure of crystals), further in transistors and computers. Crystals and liquid crystals (cholesterol) evolution together with a person. From the moment of crystals occurrence before occurrence of a person billions years have passed, but the signal of a feedback nevertheless has returned to a crystal and has generated a new branch of evolution. Now a person in a combination with a computer starts a new civilization.

As other example interaction of the person with a cell (genic engineering) can be. New kinds of alive organisms which for some reasons could not arise [129] as a result turn out. The reason of the person pushes an evolution of atoms (synthesis of transuran elements), cells (genic engineering), crystals (semi-conductor devices), etc. «Cyborgization» of a person can be an example of administrative hypercycles. Achievements of a technosphere have allowed to implant technogenic bodies, gauges, stimulators into an organism. The cities constructed of stone, are the new form of rocks existence. An insect larva, building the small house representing an environment from sand, as a matter of fact, does the same, as a person.

Sinergrtic control is the most typical case of control in the nature. Control is carried out by means of an influence on parameters of the objects order [102]. For example, if it is required to raise pressure of gas in a vessel it is senseless to influence movement of each molecule. Simply enough to heat up a vessel. When a person operates a horse there is no need to influence on each muscle, it is enough to use reins and a whip as parameters of the order. The brain does not influence on each cell of an organism, a cell is absolutely homing element. It is enough to create demanded concentration of the necessary molecules in an intercellular liquid and the cell itself will "know" what to do.

Rhythms of a heart work are defined by an independent organ. For activity initiation of a trained person it is enough to publish the order, etc. Reaction of a support to pressure arises even in the case a person does not know, how it occurs. However contrary to natural rules technical automatic devices are supplied with detailed algorithm of actions, that essentially complicates a control system.

Conclusions.

1. Biosphere filogenez is a relay race of technologies transfer of a survival from parents system to affiliated.

2. The tendency of transition during evolution from self-organizing to control is observed.

3. Self - organizing systems have not got "long-term" control centre yet, and are "young". There is a fast change (relay race) of leaders in them.

4. Specialization leads to occurrence of the operating center which reduces a variety of behaviour of alive system, directs its movement to "corridor" of evolution. In any operated system there is a center, namely: the leader, the dominant.

5. Systems existing in «humanmeasured» time, are estimated subjectively as operated. Fast or imperceptible for the observer change of leaders is estimated as self-organizing.

6. Controling processes can be characterized by parameter «P», where P - the attitude of "life" duration of a control system to the longevity of operated system.

7. In biosphere it is possible to allocate four objects with a persystent control : monocelled, metaphytes (person), technotzenos.

8. Biosphere reminds a puff pie from systems of different organization.

9. Natural control systems were created "from below" and raised the level of organization during evolution.

10. The higher the level of complexity of the organization (animals, mankind), the more specialized levels of control become in it.

11. In a harmonious combination always are operated (order) and stochastic (chaos) of the organization.

12. Control tries to homeostat the best samples of organization. Stochastic processes carry out search new, not standard structures.

3.5. Control, brain, consciousness.

Progressive development of control systems is justified by that behavioural functions have appeared more a universal remedy of selfpreservation, than specialized protective adaptations. For 3,8 billion years of existence the biosphere constantly "invented" adaptations and the technologies rescueing alive from destruction. The alive substance in the development went by different ways. Except long-term "defensive" adaptations, tactical, behavioural reactions developed. Every possible horns, hoofs, armours, bones, thorns, the chemical weapon, masking and other adaptations rescueed only from those influences against which they have been intended. Against fast, various influences these shifts could appear useless, therefore the behavioural variant of a survival has appeared more effective, than attributive. For example, the reptiles (lizard) which have lived up to now, during hot time in desert are dug in the sand, and leave on hunting at night. Birds have preferred flights (migrations) on huge distances to other mechanisms of protection against seasonal changes of weather. Some fishes, squids, chameleons are able to mask. Termites support a microclimate in refuges.

The fact which does not raise the doubts is that the main subsystem of control in complex organisms is a brain. Evolution of a brain (tzefalisation) is looked through from worms (the most ancient alive essences). The brain became a control centre at multicellular animals.

Before occurrence of a brain by control centre in cells was DNA. During evolution the quantity of chromosomes in a cell, and length of DNA [136] increased. For example, DNA of bacteria contain $4 \cdot 10^6$ nucleotids pairs. DNA of the fly drozifila - $1.55 \cdot 10^8$ nucleotids pairs. In a person the longest DNA - $3 \cdot 10^9$ ' pairs. Many genes of an amoeba and a person are similar. DNA of a mouse and a person differ on 20 %, and a chimpanzee and a person only on 2 % [73].

Cells, control on management, and their congestions have formed a brain. Development of a brain and other operating systems of organisms proceeded as a consecutive "construction" evolutionary of some reason, the quantity of neirons increased in a brain. There is an opinion [73], that a person has already stopped evolution as a physiological object since during 40 thousand years of essential morphological changes catfishes is not observed. But evolution of a brain, probably, has not stopped yet. To trace evolution of brain structures of the person it is not obviously possible because thin structural researches of a brain have begun only in the sixtieth years of the 20 century.

The reason of individuals was integrated into a collective reason which was added with "remote" elements of memory and processing of the information, by computing systems, methods of the accelerated knowledge.

In a person the reason is phenomenologically shown in a choice of behaviour, change of an inhabitancy, in invention, a writing of books, a scientific search, in ability to study and many other things. All the listed actions are necessary to provide favorable conditions of existence, i.e. these actions are necessary for a survival. **Therefore we shall define reason as dynamical means of development and accumulation of technologies of a survival, technologies of adaptation.** Adaptive reactions are shown in irritability, reflections of biological organisms, and also in instincts. Reflexes are actions not always expedient. All alive organisms possess a reflection. The reflective answer to a call of an environment, as a rule, is based on in advance prepared programs of actions which have proved the efficiency in the certain conditions. The standard reflective answer in the changed conditions can appear harmful. Instinctive actions are considered expedient, but subconscious. Conscious action is known to the subject before fulfilment of an action.

In the evolution any kind of alive essences, prefers to develop already available deposits, instead of to invent new ones, therefore the mankind developed that had, namely: a reason and its carrier. If the reason of a person was the exclusive phenomenon, and in the biosphere nothing would not precede to it, it would mean infringement of the law of evolution which approves, that all new bears in itself attributes of the past. Etologists know about existence of animals reason, therefore with laws of the nature everything is all right [69, 70].

Uniqueness of a human reason was obviously exaggerated. The reason and an instinct, are functionally similar (promote a survival of an organism). When the essence without training operates with some "standard" ways such behaviour is named instinctive. The eagle breaks with a stone an egg of an ostrich (maintenance with food). The bird constructs an intricate jack (maintenance of posterity safety). Beavers build houses, construct dams, channels. It is possible to result still set of examples from primitive digging holes up to constructions of houses termitaries with the conditioner. All these actions have one purpose, namely: maintenance of survival rate. The purpose is the central concept in any model of behaviour of operated systems.

There is a proof error, that the reason is only in a person, and in animals only an instinct. And the person often operates instinctively when meets a standard situation. But in non-standard situations it is necessary to think. In this a reasonable of a person is seen. A person is able to make a car owing to a reason. And a spider spins the networks (technology of a feed) owing to a congenital instinct. Let's analyse these statements.

The spider and the person realize actions (if you want work), using knowledge. But knowledge of the car has been got during ontogenes of a person. Knowledge of a spider has appeared during its filogenes. During evolution there was time when spiders still did not exist, but there were their evolutionary predecessors. During filogenes in any way there were skills of weaving the webs fixed in genom of a spider. Not all spiders can spin a web, many spin it differently (it is all the experience of a concrete taxon).

As we see,a distinction between a spider and a person in this case consists in that the spider "was trained" during filogenes by a trial and error method (millions years and millions generations of pupils), and a person is capable to learn during one life. However ability to be trained was developed at the person also during filogenes. There is one purpose of these processes. It is necessary to create such change in an environment to provide itself with food and other means of existence, and also to be fenced off from whims of elements (a house, a nest).

Experience of a spider is written down by nucleinic blocks in genom. And experience of a person is stored both in genom, and in a brain, and on other technogenic data carriers (a paper, a photofilm and others). The instinct shows a maximum of speed at standard situations. Reason has more variants. Studying of inventors algorithms [12] has shown activity, that all inventions (obviously reasonable actions) are carried out by combinations of knowledge. Inventions are virtual "chimeras".

The consciousness - operates, work - executes. Work is the means of a survival consisting in transformation of an environment. Work is effective means of adaptation when the operating object changes the environment of the dwelling in the interests. If « work has made a person of a monkey » work preceded the person. In such definition and instinctive actions of animals, and reason of the people, the inhabitancies directed on transformations, extraction of food, it is possible to rank to a labour. People always contacted labour activity (even primitive gathering of mushrooms, fishing, hunting and so forth) with the getting of food.

The major component of a reason is a memory. In chapter 1.7 we have shown, that process of knowledge, sensation of movement, space, time without presence of memory is impossible. We shall track evolution of memory.

The world substratum is the carrier of the attributive information. The greatest philosophers of an antiquity intuitively guessed it. In it «programs» (memory) of the Universe development are sewn up. Further there were elements of memory of a microcosm and lifeless substance (are considered above). Memory of alive substance in the beginning was fixed on albuminous molecules and polynucleinic acids (DNA, RNA). Then there

was a memory reflected in congestions of neirons. And, at last, memory on inorganic carriers of the different nature - a component of a technosphere.

So, memory, management, consciousness, - results of the Universe natural development.

Conclusions.

1. The reason is an evolutionary addition of control systems. An evolutionary number of reason is shown in irritability, reflections, instincts.

2. Memory, as well as the information, is the integral attribute of a matter. Memory developed in following sequence: attributive heterogeneity of a substratum, memory of inorganic substance, memory of alive substance (DNA, fibers), memory of neural systems (brain), technogenic memory.

3. Work is an executive part of control systems and provides self-preservation of alive substance.
4.1. THE SYSTEM LOOK AT THE WORLD.

By 30-th years of the 20 century in orgavisms the biology, the Gestalt of psychology and ecology has been formulated a key criteria of a system thinking. In all these areas studying of alive organisms systems, their parts and communities, has led scientists to the same type of thinking in basis of which concepts of link, mutual relations and context lay. This new type of thinking has been supported by revolutionary discovery in the quantum physics, in the world of atoms and subnuclear particles [27].

A Kartesian science believed, that in any complex system the behaviour of the whole can be deduced from properties of its parts. The system science shows, that alive systems cannot be understood by means of the analysis. Properties of parts can be understood only in a context of the whole.

The first representations about system have arisen in an ancient philosophy in the form of the concept of orderliness and integrity of life. Myths of Homere were represented in the systematized and rational form. In «Theogonia» by Gesiod majestic process of the World birth from initial chaos in what the idea of unity of the World is looked through is described. Cosmologics process was described by means of analogies as a process of a consecutive birth of gods. The complex natural and social phenomena became clear and explainable by their comparison to corresponding gods. And the divine genealogy had the system and ordered character [208]. Well-known Heraclit aphorism later has sounded: " All flows ... ".

The mythological consciousness contradicted new knowledge. There was a need for thinking which would give the person world outlook orientation and was based on knowledge, instead of on a myth. The arisen philosophy began to carry out this role.

Any theoretically conceiving person in all epoch created conceivable systems. As examples Platon's philosophical system, logic system Aristotelya, Gegel's philosophy, idealism of the Edging, astronomical systems of Ptolemey, Kepler, Galilee, Wiener's cybernetic systems, Eshbi [93] can serve.

The big contribution to development of the theory of systems was brought by Russians. It is possible to name E.V.Fedorov (« Symmetry of correct systems of figures ». 1891), D.I.Mendeleyev (periodic system of chemical elements), V.Vernadsky (biogeochemistry), V.Sukachyov (the theory of biogeotzenos), A.Bogdanov (the theory of an organization) etc. Three volumes of innovative book "Techtology" by Bogdanov were published in Russian during with 1912 on 1917. Widely discussed German edition was published in 1928. Nevertheless, in the West it is very poorly known about the first version of the general theory of systems and about the forerunner of cybernetics. Even in "The general theory of systems " by Ludwig fon Bertalafani, published in 1968 and containing a chapter on the history of the theory of systems, does not contain any reference on Bogdanov. It is difficult to understand, how Bertalafani, a high educated person published all the original works in German, could miss a work by Bogdanov [92].

In 20th years the English mathematician and philosopher Alfred Nort Uajtkhed has formulated the philosophical system strictly focused on processes. During the same period of time psychologist Uolter Kennon, having taken for a basis the principle of a constancy of the internal environment of the organism, put forward by Claude Bernard, has developed it in the concept of homeostasis. Homeostasis - the self-control allowing organisms to support a condition of dynamic balance, while their variables change in admissible limits. The remedial philosophy of psychologist Uajtkheda, the homeostasis concept of Kennon and experimental works in the field of the metabolism have rendered strong influence on Ludwig fon Bertalafani and had led him to the creation of « Theories of the open systems ». In 40th years Bertalafani has expanded the concept and has tried to unite various concepts of system thinking and organism biology in the formal theory of alive systems.

The paradigm of integrity, general coherence of elements of the world was finally issued in the theory of systems in the first half of the 20 century. Ludwig fon Bertalafani is considered to be the founder of «The general theory of systems» (GTS), started to publish his works since 1938. Fon Bertalafani considered as primary goals of GTS: a formulation of the general principles and an establishment of exact laws in not physical fields of knowledge (biology, social sphere); revealing of isomorphism of laws in various spheres of knowledge. It is possible to compare only similar objects. But how to compare weight and volume, taste and sizes? Obviously, for comparison it is necessary to find «something the general», that unites them. Fon Bertalafani concerned, that the general is that all objects are systems [25]. However a definition of the concept "system" till now is not completed.

All subsequent development of philosophy was a dispute about original and about general. Philosophers searched for something general, that unites all things and subjects of the world (see section 1.1 - 1.2). The fact of a recognition, that the World exists objectively, already is a statement of general essence. The generality of movement of all elements of the world, a generality of links between parts, a generality of processes is clearly declared in philosophy of Heraklit. Engels in «Antiduring» approves, that « in the nature there is still something the general except the fact to be, to exist».

System representations intensively developed since 18 centuries. Spinosa interpreted logic, as an attribute of the natural whole, a way of expression of the general order and a link of things, considering a body and its environment as the whole, system [87]. Marx and Engels continued to develop this idea. «All nature accessible to us forms some cumulative communication of bodies, and we understand here as a body all material realities, beginning from a star and finishing atom. The dialectics as a science about most general laws of interrelations, interconversions of phenomena» was generated. The philosophy has come to it much earlier than this idea has become strong in natural sciences.

According to Bertalafani a system means interrelation of the most various elements. «All consisting of the parts connected with each other we shall call a system» [25.] U.Eshbi [240] and J. Clir [97] define system as a set of variables. «A system is a set of subjects together with links between them and between their attributes» [160.] «A system is not any set of elements, and only such formation in which all elements are so closely linked, that formation resists to external bodies as a unit» [144]. In the most general and wide sense the system can be named any rather complex formation consisting of a set of interconnected elements which as a unit cooperate with an environment [109].

A number of researchers consider, that it is impossible to identify a system with an object or simply with a fragment of the validity. Any fragment of the validity has an infinite number of displays and its knowledge breaks up to set of the parties (set of systems). Sadovskij V.D., considering systems as some realities (a part of realities), marked, that the concept "system" describes some ideal object» [190], but «ideal » always is in consciousness. **Hence, a system is a way of representation of real life by means of human consciousness, but not a reality.** The system as life does not exist, and is a way of reflection of a life in consciousness of the subject [225]. It is similarly possible to remind (section 1, 1.1, 1.2), as the model not is life, and only its simplified reflection in consciousness. A.I.Uemov marks relyativizm of the concept «system» [210.] «We speak

about some set of elements, as a system only concerning the certain properties and attitudes of elements». «Any object can be a system, but it can be not a system».

E.Makh and A.Puankare considered a system only as a result of the subject activity of knowledge, which Dingler [68] generally expressed in the thesis: «the semantic substantiation of any theoretical system is only an activity of consciousness». Even more precisely in this occasion J.Clir expressed [97]: «a system is everything, what we wish to consider as a system». S.V. Yemelyanov and E.L.Nappelbaum have defined system as a specific way of knowledge organization of a reality, specially calculated on most effective utilization of this knowledge, and also for realization of some purposeful interaction with a reality. Eshbi called a system look at the world a scientific way of the world simplification. But simplification should not lead to distortion of representations about a reality. As analogy it is possible to result Rodin's principle which sense is reduced to cut from a block of a marble of all superfluous, the sculpture (system) will not turn out yet.

Some authors enter an integrated attribute into definition of a system and refuse to recognize a system in any set of elements [210, 221, 198]. However allocation of a system integrated attribute is subjective too. An ecologist, considering a tree, will see a system attribute in its interaction with an environment. A joiner will consider a tree as the material for sawing, etc. Depending on the purpose a different system attribute is allocated. Any object as a whole can be presented by set of systems concerning the given quality [4.] «It is obvious, that resulted above definition of systems are too wide to be constructive» [109].

Systems in reality do not exist, but promote knowledge of the World. It is possible to imagine a system which in reality has never existed, but it can be created artificial. All technosphere is a result of such modelling. A system, an image, a model at the beginning arises in consciousness and only then materialized in products. These products are not identical to mental systems. During designing they undergo plural changes and often unexpectedly show properties which were not assumed at mental experiments. **Thus, the object and its subjective image in the form of a system are not identical. Becoming of the systems theory is transmission process of knowledge algorithms of the World from subconsciousness into consciousness (more in detail see ch. 7).** It would be hardly possible to change quickly the developed belief about a reality of existence of systems, but it is possible to change its interpretation. For example, a phrase of the type: «we have constructed a power supply system» is necessary to interpret in this way: «we have constructed an object which is described as a power system».

It is seldom possible to explain a behaviour of a complex system change of one variable. A change of one parameter usually causes a change of many others which in turn influence the first parameter. When it is a lot of its information we have to integrate it, statistically average. Researches in physics become easy owing to an opportunity of independent variablels number reduction in experiment. But such means can not be in biology, psychology, sociology. In chapter 2 we analyzed consequences of such simplification when a narrow concept «entropy» began to apply to supercomplex objects. Therefore most sharply question is about the new methodological approach, capable to replace the classical scientific approach. A natural output from created position is the reference to methodology of the systemic-functional approach.

The complex object cannot be described full and in details, and, therefore, at construction of its model it is necessary to find the compromise between simplicity of the description and adequacy of an objective reality. Universal language of a description is not created yet. There are languages of a body, a movement, actions, mimicries, languages of artistic images, sign, symbolical, languages of senses, etc. [82] are known. Each again acquired language changes a picture of the world. Try to explain to the dancer execution of a dance by a language of mathematics, or verses. It is better to show (a language of a body movement). In many scientific disciplines formal language on which it is convenient to state problems complexorganized objects is necessary. Only at presence of common language internal integration of knowledge will be reached and is broken a barrier between mathematicians, cybirnetics, physiologists, economists, psychologists, sociologists. For now the challenge of translation from one language to another with inevitable losses of the information is necessary.

So, the system look is a language of the reality description. Without a subjective partition of the surrounding validity into objects, without an establishment of links between these objects, establishments of causes and effects, the system thinking is impossible.

The consciousness dismembers the world on elements [82] by words, and sense organs also work discretely. Eye scans an object in the certain sequence, beginning with borders. **Therefore the system look, as well as logic, is a display of the natural mechanisms of discrete research of an objective reality hidden in subconsciousness.** But subconsciousness integrally feels the world in such form which at a conscious level can be named a system thinking (see section 1.4).

As it is important to find a universal language of the validity description, we shall try to unite two ways of vision of the World: modelling and construction of systems. There is a wide set of ways of modelling: prototyping, algorithms, imitating modelling, etc. Comparing modelling and construction of systems it is possible to come to conclusion, that both of ways represent simplification of an objective reality with the purpose of its knowledge. Each object can be described by a set of models and a set of systems. The system is a narrower concept than a model. **Any object can be presented by a lot of models, and only some of them are systems**. For example, the model describing a structure, the organization, is a system. In the literature it is often possible to meet an expression: «A model of a complex system» (read «a model of a complex model»).

A system modelling combines only elements and communications. Other kinds of models display a much greater set of properties of real objects (form, color, smell, density, weight, energy). Therefore a system represents a special case of the model displaying structure. Really existing things, objects are better to define by a concept "organization" [238].

Resulted above definition conflict with philosophical understanding the World system. In cybernetics the concept "system" distribute only up to some "horizon" of influence. An «entropy» interval exists between the consequence and the reason if the reason is removed on a dissipative interval. The signal on a course of movement dissipates, weakened, got littered with handicapes. However philosophers ignore a dissipative interval. They represent the whole World as the integral, connected system (chapter 1).

«If the statement is fair, that the World is infinite in space communication between any bodies as much as necessary removed from each other would be bilateral and mutual only in the case that a speed of interactions distribution between them would be infinitely large» [196]. However the theory of a relativity (if it is true) denies such opportunity. The modern theory of information proves, that at distribution of a signal its intensity falls, the quantity of handicapes (noise) increases. The signal will reach infinitely far object infinitely weakened [144]. Besides it not simply should reach the addressee, but also cause a reaction in it. A reaction of complex object arises only on those signals which exceed «a threshold of sensitivity» the receiver [72]. The weakened signals of interaction will not cause a reaction and there will be no a process of homeochinezis.

The system in a view of a signal attenuation can interact only with a part of an environment which can be named «a segment of an activity field» [142]. But also inside of a segment of an activity field not all factors render identical influence on result of an object activity. For example, for the individual not all members of a society are equivalent. Those factors which can influence on a system activity, Kastler suggests to name the signature [94].

In physics of a microcosm, the so-called, tunnel effect which is not considered in cybernetics is known, but it exists in a microcosm. We shall explain by a modelling example. The ball from one pole can "jump" in the next pole (occurrence of a link) in the case if it is enough energy to break a dividing barrier. However sometimes the ball with low energy can, any image appear in the next pole (as though to pass through the invisible tunnel). The link channel is not present, but the interaction is carried out. Obviously, in the nature there are "tunnels" which can link the remote objects. To pass from one coil of a flat spiral to another it is necessary to move long along a coil but if "to pierce" a space between coils it is possible to appear at once in the necessary point. While it is a fantasy, but we still badly know properties of space.

Apparently, the modern treatment of a concept "system" does not coincide with its philosophical sounding.

Divergences, apparently, consist that for philosophy the fact of interrelation (even at an infinitesimal level is important), and for cybernetics, theories of control interests are represented only with functionally significant links. Everyone sees what are they interested in, therefore we shall remind a definition of Klir: «A system is everything, what we wish to consider as a system».

To combine a philosophical treatment with a pragmatical point of view is possible in the case if to start with only a paradigm of a global evoluyionism. The cybernetics investigated homeostats, i.e. object of cybernetics were not developing systems. The cybernetic object functioned or degraded (collapsed, lost the useful properties), but never evolutioned. In a system of an engineering control of complex technical objects (energynets, railways, etc.) evolutionism also is not pawned. Functions of reconstruction a person takes in himself.

But natural systems, finishing their life cycle, independently generate "posterity". Nothing disappears completely. On the basis of dying out mutants appeared. Waves of a life-death replace each other. To the change of dying off others come. Therefore in GTS it is necessary to strengthen the concept of evolutionism.

In Urmantsev Y.A. works evolutionary motives sound brightly enough. Its classification of systems testifies to it on static, dynamic, developing, steady, unstable, and their combinations [212].

This classification can be simplified at once, having excluded from consideration static systems, they in the nature do not exist (or then it is necessary to refuse of a paradigm of the global evolutionism). Steady systems make changes in vicinities of some attractor, i.e. they are dynamical, nonequilibrium. In chapter 1.7 it is proved, that time is subjective sensation of the World variability. In four-dimensional space time any system, and its elements look as a film which cannot be presented in the integral image. Our consciousness scans it on the staff. Classical GTS considers system, as one staff of a film. The axis of variability (time) is one of coordinates of the World multivariate, therefore the evolutionary approach to GTS should be combined with representations about multidimensionality of the World.

We suggest to perceive a system not as a static structure (one staff), and as a process in four-dimensional space - time (a film, a biography). It is necessary to note, that multivariate models of the World in the beginning of the 20 century D.Uspensky analysed [215]. He described multivariate, but a static World. In chapter 4.4. on the basis of his ideas the synergetic theory of systems (STS) develops.

Control means presence of the purpose, therefore in definitions of "systems" it is necessary to specify their purposes. The concept "purpose" also has no exact standard definition and in существенной degrees depends on investigated object and concrete aspect of its studying [164]. The purpose represents «internal activity of object», reflecting special character of interaction with an environment. «The basic direction of activity at present time can be named the purpose of activity of object, and its behaviour caused by it направлением of activity - purposeful» [34].

Complex objects for the maintenance of an internal homeostazis actively influence on an environment [105, 58]. With increase of the objects complexity a role and value of this form of activity (for example, at the person) more increases.

However the complex object is induced to activity not only by needs, but also by aspiration to anticipate their occurrence, in a direction of the future object activity (the new validity) is shown not only its past and present, but also future.

In mathematics the concept «attractor» close to the concept "purpose" is known. Under «attractor» in synergetrics rather steady condition of system which as though draws to itself set of "trajectories" of a system movement is understood. Figuratively attractors are possible to be imagined in the form of certain "whirlwinds" which involve in itself a set of "trajectories". Attractors predetermine a course of a system evolution on the sites remote from direct "muzzle" such «funnels» [101]. For example, stones falling from a mountain, borrow a position in the bottom part of a valley. It is interesting, that from the moment of falling a stone its future condition is determined an environment in which it moves. The stone will lay in the bottom of a valley.

The concept "attracor» can be correlated with Platon's eidoses (ideas, initial images) to assimilate and imitate which things of the visible world, and also with ideal Aristotel's forms, and with reference to a human mentality - with Yung's archetypes. In psychology they are obvious or latent installations which define behaviour of a person. [101.] Attracor is also an ecological niche in which a zone functioning alive essences is carried out. Animals cannot long exist outside their ecological niche (attractor).

So, in a modern sounding a concept of a purpose extends for limits of human activity and is treated as an orientation of behaviour of the open nonlinear system, as presence «equifinal conditions» (finishing only some stage of evolution) of a system.

If a person designs the car the purpose is set by the customer. If the cross-country vehicle is needed the designer creates a system for achievement of the aim. In a classical model of firm the hierarchical order, a subordination of communications, system (hierarchy) of the purposes is presented. At each hierarchical level – their own purposes. The purposes of the lowest levels submit to the purposes of highest levels. In control systems highest levels develop a strategy, a mission. Average elements

plans concrete actions on realization of these policy, and the basic performing work is carried out by the lowest levels. The coordinator should distribute efforts between levels. For movement to an overall aim the postulate of compatibility (coordination) of the purposes is entered.

But when it is required to create an industrial (social) system which should be effective in 10-100 years a condition abovesystem (the nature is required to predict, societies) in which it is necessary to work in 100 years. Such purpose is not set by the customer, and defined by natural process of the nature. In this case the ending of the movement of a system is a synonym of the purpose. In such cases people resort to tracking of a development trend. For example, how to define the purpose of buiiet movement of? It is necessary to track its trajectory and to find crossing a trajectory, with any other object. It is the purpose (result) of a bullet flight. The purpose of a shooter can be another (a missing). The purpose of the organization creation is stated in a business - plan. But the real result can differ from the initial purpose.

For alive organisms N.A.Bernstein treats the purpose as the model coded in a brain of a suitable future. But if we deal with social, economic or biological systems there are problems with definition of the purpose. Complex systems always have a set of the purposes. The purpose of the individual life is limited by its life cycle, and the purpose of a society (« the light future ») is always foggy. The purposes of a subsystem and a system do not always coincide. An oversystem influences on behaviour of subsystems, subordinating their purposes to its own purposes.

Trajectory of a complex system movement to some purpose (attractor) is difficult to predict, but it is possible. For this purpose in the system of analysis it is recommend to study an object at the beginning from the side of the environment. This principle is known for a long time. In the physics it is stated as a principle of Galilee – Einstein relativity. Popularly it is possible to state this principle of a relativity on the following example. If inside of the car isolated from an environment to carry out any researches, supervision you never learn where there is a train. For vision of the movement purpose it is necessary to leave the car and to look at an inscription, for example, «Moscow - Vladivostok» or to ask at the station.

There are many biological, economic, social, political systems purpose of which movement is unknown. Economists study processes from within a system, therefore on a question of the purpose of the economics development they answer unequivocally: "For a constant, steady growth of well-being and consumption. The purpose of business - maximization of profits» [239]. Look at this imaginary purpose from aside, and you will see, that the population of a planet grows, needs of each individual do not this statement similar to dogma about cognoscibility of the infinite world forces limited in time and speed of knowledge of mankind (see section 1.2). Mankind develops intellectually and economically but where does a wheel of history roll, where is an equifinal of a social movement? This purpose can be seen only from an environment. Environment for human society is a biosphere, and a geosphere, and the Solar system, and a atomarno - molecular substratum. Whether it is necessary to consider all these environments, and in what sequence? Or is it possible to be limited by one, but what one? In 5 and 6 chapters of the present work we work on this task.

V.Vernadsky [39, 40] and Teiyar de Sharden [202] studied the biogeosphere [39, 40]. In their opinion, the mankind moves to a noosphere (purpose), but what there further? Both thinkers assumed that the mankind will always exist, but there is a relentless nonlinear law of life cycle (in borders of common sense all has the beginning and the end). Solar life cycle will come the end with an expansion of the Sun (destruction of the Earth), then compression to the white dwarf (but already without witnesses) [218].

If activity of a reason is capable to change a course of global evolution or to evade from impacts of elements the knowledge of the purpose is necessary for strategic maneuver of the noosphere. Laws of the nature dictate correct behaviour to all alive and lifeless objects. Default of laws of the nature will be pernicious for the individual and society. Therefore the knowledge of laws of development and skill to be entered in them is the main task of mankind. It is important to learn, when and because of what there will come the end of mankind (if the end is inevitable, that is there sense to resist to elements?).

In the general theory of systems V.N. Sadovsky results the logic construction essentially denying an opportunity precisely to define the purpose of some system development [190, 191]. For each object it is possible to allocate its environment part of which it is. The environment in GTS is accepted as abovesystem. The world is represented as hierarchy of abovesystems, "enclosed" each other (a model of a "nested doll"). For a correct choice of the purpose of some object development it is necessary to know the purposes of all galaxy hierarchies development. But it is impossible, becouse nobody knows a plan of the god, or a purpose of

singular conditions of the Universe. Thus, Sadovskij V.N. proves correctness of Kant agnosticism. However in the resulted reasonings there is an essential defect.

If the wheel of the evolution slides under the laws of the nobility of the purpose of the nearest hierarchical levels (a principle of one-man management in social systems) which on a circuit of hierarchies will be coordinated with higher purposes suffices for a choice of the correct purpose. However there is a set of the systems which are being not in hierarchical attitudes, and in "horizontal", anarchical. Therefore the purposes should be coordinated not only on a vertical, but also across.

It is necessary to distinguish the purposes of homeostation and the purposes of development. If the organization sets as the purpose to carry out manufacture of the set quantity of production, despite of market changes it is the purpose of homeostation. If the organization plans in some future to pass to manufacture of new production, this strategic purpose concerns to the purposes of development.

Carrying out of a system border in an environment causes questions. How to connect a paradigm of integrity of the World, its continuity, coherence to presence of borders between systems. What we call a part, is only a pattern in an indivisible web of mutual relations. According to mechanistic outlook, the World is an assembly of objects. System thinking, we understand, that objects are included in more extensive networks. Representation of the alive world in the form of a network of mutual relations became one more key characteristic of a system thinking. "The network thinking " has changed not only a view on the nature, but also a way of scientific knowledge description [219].

It is not necessary to think, that the border is the spatial characteristic of a system. The border is defined by a functional accessory of elements. In the modern economics organizations may not have a constant territory. Parts of the organization can be scattered worldwide, be in movement, conduct work from vehicles, but functionally be elements of a system. For example, Internet is such organization.



Fig. 4.1.1. An illustration to a problem of system borders.

Usually those elements are included in a system which promote an achievement of the whole system purpose. But not all is so simple. An element can promote achievement of the purpose with different efficiency (E). What elements must be included in a system? We shall result a graphic image of a problem (fig. 4.1.1). Efficiency is the concept adhered to concrete conditions and problems. Efficiency can be estimated by a method of expert estimations. Therefore carrying out of a border is a subjective business. In the structure of the system the most effective elements (to the left of border) are included. The border is a transitive zone. Experts can doubt where to carry the elements which are being a transitive zone. To the right of the border there are poorly effective and useless elements.

Rational construction of a system means optimization between quantity of effective elements, profitability and controllability. Each element of a system consumes resources, therefore limitation of resources does not allow to contain surplus of inefficient elements. However surplus of inefficient elements can sometimes serve as a reserve for adaptation of a system to new conditions. Change of the purpose, variability of environment can transform inefficient elements in a rank of effective elements. In DNA of a cell the huge reserve of recessive genes which do not function is reserved. But this bank can serve as a saving reserve in case of any ecological accident [133].

And it is possible to consider an environment the tank of elements. Their inclusion in a structure of some system presumes to solve earlier unsoluble problems. As examples symbioses of animals and plants can serve. Effective engineering decisions often occur as a result of involving in the known system a new element from the environment [12]. Perhaps, for this reason expansivity is a prominent feature of alive systems. **Expansion consists in an expansion of a system, i.e. involving in it of some part of the environment in it, for increase of reliability of the functioning.**

Functional borders of the organization (system) change (extend, narrowed) depending on a stage of the life cycle. For the "young" organizations the superfluous maintenance of diverse elements are more common as a search of the place under the sun demands flexibility, variability. After there will come a maturity, the aspiration to variability decreases, a stage of rationality, removal of superfluous elements and communications begins. The functional border of the organization narrows. Disintegration of the organizations (death) leads to washing out of borders, its "dissolution" in an environment. **So, the border of a system is subjective, diffusional, changeable.**

It is possible to carry a **problem of hierarchy** of world systems to a problem of borders. Allocating levels of hierarchy, we should lead between them borders. Hierarchy is considered as invariant.

The system approach recommends to consider objects in the form of hierarchy of subsystems for understanding of a place with which they borrow in the hierarchical order. By that it will be certain, it is necessary to allocate what subsystems in structure of an object to explain its functioning. At transition from a higher level of complexity to a lower level the degree of detailed elaboration of object increases, deeper understanding of feature of functioning is provided. In the system analysis it is recommended to begin the description of object from an oversystem («tell me, who is your friend, and I shall tell who are you»). It is important at studying development of social, economic and political systems.

A transition to higher level of hierarchy, studying of activity in wider context understands the sense and the purpose of an object. It emphasizes necessity not only to study an object the means corresponding that level of complexity on which it is considered, but also to consider adjacent levels of complexity, their mutual influence detailing many aspects of an object activity [58].

However a hierarchical sight at systems collides with difficulty of hierarchical levels differentiations. The concept "hierarchy" (a vertical of authority, submission) has arisen in the Ancient Greece and concerned distribution of imperous powers by way from the highest level to the lowest level. Application of this concept is pertinent in a Christian church, in sociology, the theory of bureaucracy, the theory of organization, the theory of control, but when it began to be applied in the system analysis of lifeless objects, there were difficulties. We shall show it on the following examples.

The visible Universe contains hundred billions galaxies and fogs. The galaxy contains hundred billions of star systems. The star system contains a star and the planets moving around it in the center. Planets consist of molecular substance. Molecules develop from atoms. Atoms can be spread out to kernels and electrons. The kernel contains nucleons (protons and neutrons). Hypothetically nucleons consist of three quarks [238]. The resulted partitioning is considered to be hierarchical.

Is it possible to consider quarks dependent on a condition, for example, of a star. In modern stars there are no such temperatures which could lead to disintegration of nucleons and "clearing" of quarks. The quarks which are a part of a star, now have ceased to depend on it. Radioactive disintegration of atoms in bowels of planets also does not depend on solar activity. In borders of the solar system, on planets and in interplanetary space the quantity of atoms slowly decreases due to their disintegration. Those elements which are synthesized in bowels of the Sun, will never fill up a chemical "luggage" of planets, because at the end of its life cycle the Sun together with its contents will be compressed into the white dwarf. The condition of planets depends on the activity of the Sun. But planets never were a part of this star, and not the Sun has generated planets. Both the star and planets have occured from a dust fog (simultaneously or consistently).

It is considered, that the alive organism is arranged hierarchically, consists of organs, organs from fabrics, and fabrics from cells. Cells contain organells, consisting of albuminous molecules. Molecules consist of atoms, etc. Operating subsystem of an organism is the brain, but it cannot influence on a condition of atoms which are a part of an organism. However atoms, being exposed to radioactive disintegration, can influence on a condition of a brain.

If, under the recommendation of the systems theory, a researcher can not consider atoms as elements of an organism, (though they are included into its structure) it remains to include atoms in the structure of abovesystem, i.e. to carry them to an environment. There is a contradiction.

Atoms simultaneously are a subsystem and an oversystem. **Obviously, the hierarchy cannot be built by mechanical division of system into parts** (elements).

Sometimes hierarchy is tried to distribute out of limits of an organism, proceeding from that the environment influences on an organism, therefore it is an oversystem. But not all parts of an environment dominate over an organism. Often organisms dominate over an environment. V.V. Vernadsky has convincingly proved this fact in his works. Procariots (the elementary monocelled) at the beginning of the evolution of a terrestrial life have changed a chemical compound of a terrestrial atmosphere. Alive organisms counteract influence of an environment, creating systems of protection. Thus, an oversystem not always is in hierarchical attitudes with a subsystem. Not all communications are hierarchical. There are also anarchical alliances.

The set, cooperating trees (wood), is the anarchical organization. Such systems can be named biozenoses. But a separate tree is arranged hierarchically. The biosphere, as a whole, is the organization of anarchical type. It is difficult to notice hierarchy in it.

The world community represents the anarchical neighbourhood of the various hierarchical states. The theory of anarchical systems is not developed yet. The system of anarchical elements can turn into hierarchy. The anarchical crowd of people at display of the leader turns to the organized group. Among set of anarchically connected modern states USA applies for leadership and tries to influence on the international community.

The accessory to system not necessarily should is accompanied by the hierarchical organization. Hierarchical coordination can change during life cycle of system. Elements can be "native" (naszent) and "adopted", can have different age and join the structure of a system at various times.

The theory of systems builds hierarchies according to «humanity» in order that the maximum hierarchy should be "above", but in the Universe the maximum hierarchy is the world substratum, which directs evolutionary processes.

Evolution went from below to upwards, from a primary substratum to a life and a reason, but the science of the beginning of the last century studied the World in a direction from the present to the past, from the person to "nature" (antropocentrism). For example, alive organisms are a consequence of cells development, not rather the reverse. The biosphere existed from the moment of a life origin and changed together with its subsystems and elements. The generator of observable evolution is the world substratum (not observable). Therefore "wind" of evolution blows from a substratum which existed "always" [101]. Dynamics of a substratum today develops evolution the same as it was yesterday.

A person creates systems in which elements depend on operating superstructures (a technosphere, a policy, an economics). Political structures build a pyramid of authority. In biosphere everything is on the contrary. The aspiration of cells to association in an organism proceeded from cells, but not from the administrative hierarch. Cells "delegated" to bodies and fabrics their powers. In a gender-tribe society leaders were elected. Later imperous powers began to be usurped. However natural processes come back, and people tries to delegate their requirements to power structures.

Antropocentrism has led to dangerous consequences. A person has named himself the maximum hierarch, hence, has appropriated the right to force the nature. **Synergetic sight on the World should force a person to look at it not from the outside, but from inside.**

Let's consider the evolutionary approach to hierarchy of world structures. Any process is a sequence of the certificates developed in space and in time. Chemical interactions are a chain of events. Molecules A and B should find each other, approach, develop in "convenient" positions, exchange electrons (unite), and all this is written by the formula A + B = C. Polimerization of monomers also represents a chain process $A+A \rightarrow AA+A \rightarrow AAA+A$..., etc. Consecutive stages of growth lead to formation of crystals, formation of stars, planets, galaxies to formation of alive organisms. Biotzenoses are formed by consecutive change of some conditions. This process in flora refers to suctzession [183]. Process is considered chain, multistage if it is possible to find out and measure its intermediate stages. But sometimes intermediate stages happen so short-term, that people do not notice and consider them, that reactions proceed in one stage. Nevertheless, circuits of interactions always take place.

In order not to refuse from the standard principle of hierarchy, for lifeless systems we shall build hierarchies, proceeding from the fact of evolutionary continuity under the scheme «parents - children». The previous level of development operates, creates the subsequent, hence, the predecessor hierarchically costs above the follower, therefore for lifeless systems of hierarchy it is necessary to build, proceeding from the fact of evolutionary continuity. For alive systems all is more difficult. Sometimes children start to operate parents, i.e. there is an inversion of hierarchy.

Classification of systems. GTS, as well as any other science, has not avoided necessity of classification. Variants of classification of systems are very inconsistent, since the system is a mental model of the desirable parties of object. Any object can be described by a set of systems, some of them seem incompatible. The developer of classification usually makes a start from the most evident for his purposes of an attribute. Classifications on set of attributes are not developed yet.

At the beginning of the 20 century a thermodynamic way of classification of systems dominated. Systems were subdivided on opened, closed and isolated. The isolated systems have no communication with an environment. This very strong idealization since such systems in the nature do not exist. The closed systems cannot exchange substance with the environment (S), but only energy (E). It also mismatches the validity since power streams are always material and informative. All systems without exception are opened in the nature, i.e. exchange substance with environment (S), energy (E) and information (I). Only in ideas at construction of system is possible to neglect any component.

The resulted classification is carried out not on objective, but on subjective parameters. If it is convenient for observer to describe object as an isolated system for the sake of simplification it can be classified as isolated. Thus formalization of the description becomes simple. So in this way all laws of classical thermodynamics are deduced. And for this reason there were myths about thermal death of the Universe, value entropy is exaggerated. Real systems are opened, but intensity of exchange MEI streams with an environment changes over a wide range.

In 70s years of the 20 century G.N. Pivovarov classified types of systems on number of elements: small – 10^3 , big, self-adjusted – 10^6 , spontaneous systems – 10^{10} – 10^{14} elements. It is meant, that simple systems contain little elements, and complex - a lot of. The author of this classification has not avoided temptation to carry out classification on a separate attribute, therefore it is full of contradictions. For example, formally it is considered, that properties of simple system are the sum of properties of its components. It is supposed, that elements in a simple system have the same properties, as outside of a system. Mechanical systems (for example, clock) are often resulted as an example of small, simple systems. We shall show, that these representations are false.

There are really a little elements in clock. Laplas causality (every **mecrepha**, without alternatives it is connected with another **mecrephëň**) takes place. But it is incorrect, that clock do not possess emergent property. Clock has a property to show time, but any detail of clock taken separately, cannot show time. Properties tooth wheel outside of clock differ from properties of the same **mecrephu** inside of clock. Outside of clock tooth wheel has set of degrees of freedom, can be moved in any direction, can make forward and rotary movements. Inside of clock it does not make progress, but only rotates. Clock cannot be presented as the isolated system since the energy source of their movement is outside of clock. The spring is got by the person and the battery is made outside of clock. The field of gravitation working in clock is outside of clock, but also the weight is lifted by the person. As we see, the banal literary example mismatches a desirable image the simple isolated system. We shall consider a number of other examples, where number of elements are a little.

Chemical interaction of an element A with an element B gives a molecule C. Only two elements interect, (by definition it is a simple system), but properties of A and B are not identical "C". Is available. Property of a chemical element is not identicall to properties of cluster (groups of identical elements). One molecule has no properties of water since the element outside of a system has other properties. Again we see an inconsistent combination of attributes and we do not know how to classify molecular systems.

So, **эмерджентность takes place as in simple so as in complex systems.** Эмерджентность grows out a birth of the new information which always appears at a combination of elements and communications. Association of elements in a system always limits degrees of freedom, reduces quantity of possible communications that is shown in change of properties. Change of properties can lead to improvement or deterioration of system functions, but these are already subjective judgment. It is important, that properties change. Absence of visible changes of properties specifies only that the researcher has not simply found out hem (pragmatically looks at those properties in which is interested). If combine a pyramide from identical spheres the volume of the pyramide will be more, than the sum of spheres volumes, because of emptiness occurrence between them (emergency). But the weight of the pyramide will be very close to the sum of spheres weights (without taking into account the weight of air). So, there is no emergency according to mass, but it is obvious according to volume.

The mix of one litre of ethyl spirit and a litre of water will give a volume of a liquid (vodka) less than two litres. The effect was showed as a result more dense packing of molecules, as at a mix of spheres of the different size when small spheres can be located between large spheres.

The kernel of atom consists of protons and neutrons. Their quantity changes from two to hundred (by Pivovarov small systems), but a neutron can exist thousand years in a structure of a kernel, and outside of a kernel the term of its life is estimated in tens minutes. Properties of a kernel are not the simple sum of properties of nucleons. It turns out, that small systems by Pivovarov are not similar to simple ones.

Complexity can be characterized by structure of communications and elements, complexity of processes and conditions, complexity of processing of the information, by entrance and target functions, character of reactions to an environment. All this set is called as integrated complexity.

Bir C. [26] expressed complexity by a degree of determination. A.B.Berg - by quantity of demanded mathematical languages for the description. Kolmogorov estimated [106] complexity on length of algorithm of transformation of one system into another. Wiener identified complexity and organization. Fon Neumann defined it not by structure, but by variability of behaviour [147].

Complexity is defined not by quantity of elements of a system, but by predictability of behaviour and a variety of functions. Simple systems are determined in behaviour irrespective of quantity of elements in them. We speak, that a cat more developed essence, than a turtle for we judge on a variety of behavioural reactions. Complexity can be ontologic and gnosiological. Gnosiological complexity is kept until the observer will find a clear way of the object description. Ontologic complexity is a transcendental object. In complex systems variability leads to occurrence of likelihood causality. To one reason there can correspond a set of consequences.

It is visible, that the science constantly washes away borders between complex and simple systems. **Absence of uniform criterion of complexity is available.** Multidimensionality of complexity does not allow to describe evolution precisely. It is represented expedient to classify system and their elements in factor of stochasticity $Kc = K_d \setminus K_0$, where K_d - quantity of the determined reactions to influence. K_o - a total quantity of reactions.

Systems can be classified as inert and spontaneous. Inert objects in the nature do not exist. Development represents the variability directed on self-preservation. Now from a concept **«gomeostasis»** gradually pass to concept **«gomeocinesis**».

Stepin V.S. assumes a presence of the coordinate block correcting behaviour in spontaneous systems. «Any thing is a self-adjusted process protecting it from disintegration». We considered an idea of operated selfdevelopment in chapter 2 of the present monography where coordination is investigated as the basic mechanism of evolution.

For an element is accepted a part of a system explaining a principle of a system function. The researcher himself defines an element of a system. For example, an element of a molecule is usually named an atom, but not a kernel, a quark or a photon. As an element of the car is considered, for example, a cranked shaft, but not atoms of iron and carbon of which it consists. The doctor - the anatomist will name an element any internal organ of a person (for example, a heart). The biologist will tell, that an element is the cell. It is visible, that the choice of elements is obviously subjective and depends on the purposes of the person describing system. The element of the system is not a physical object. It is some abstract image allocated by a set of necessary functions. For example, the image of atom in general is absent in our consciousness. Under textbooks representation about atom valencies, the maintenance of electrons and nucleons are reduced to its sizes, weight. As analogue of atom is a ball with a planetary structure. An image which is starting from sensations is absent. There is an image of atom in the form of a functions set.

To very indistinct definition of a concept "element" it is necessary to add the following. The element is not any fragment of an object. Cutting fish on slices for frying cannot be considered as the analysis (division into elements) since the fragment does not possess a necessary set of functions and cannot exist independently. Anatomization of a fish (heart, a liver, a brain and so forth) approaches us to a concept of element. The element can exist independently if to provide its activity with adequate inflow of resources and outflow of waste (products). For this purpose the element should have an input and an output. Any body (element) can be withdrawn from an organism and to provide its functioning in the artificial environment, having connected power supply systems. The cell can be made multiple copies outside of an organism in a nutritious broth. Any element of the car can be established on the test bed. An atom can practically exist in any environment. A person (an element of society) can pass from a collective into another collective, without losing his functions. But for this purpose the element should have an opportunity to be connected by communications to a source of resources. It is necessary to emphasize, that the person passes from a collective into another collective together with the communications, opportunities, functions. An atom passes from a molecule into a molecule together with its valencies. Therefore it is incorrect to separate an element from communications. **Without communications the element ceases to function (an extraction of a fish from the water).**

An element without communications exists only in the consciousness of the subject. The detail withdrawn from the car, is not an element if the place of a detail in structure of the car is not known in consciousness of the observer. Taking a detail, we in ideas keep representation about its communications (already virtual).

Let's admit, there is nitting from strings a lacy cloth with the certain figures. If to cut out a part of figure scissors it will lead to deformations of the whole cloth, to infringement of proportions of patterns. Similarly the consciousness "cuts out" from a natural cloth fragments, but with inevitable deformations of properties. If a fish is taken from the water it will lose an opportunity to be made multiple copies, float, live, breathe and so forth. A fish outside of water is only a fragment which has been cut out from the native environment. However the consciousness can virtually supplement the lost functions of a fish, and this opportunity rescues the system analysis from discredit. Isolating an element from a system, we should remember its true connections.

So, an element is a functioning part of system together with its connections, promoting achievement the whole system purposes. The analysis, for example, of the car engine consists in its disassembly on parts, thus it is necessary to remember the order of disassembly and function of details. Assembly (synthesis) is made upside-down. The detail of the car can be rearranged on other car, thus functioning will not be broken. This example gets under action above the resulted definition. It is necessary to pay attention, that units and details of the engine can be made in different places and not simultaneously. Such systems can be named mechanistic. But defined cannot be widespread to all systems. For an example we shall consider construction of the house.

What it is possible to consider as an element of the brick house? The architect will build following hierarchical partitioning: the house - a floor - an apartment - a room - a wall - a brick. Hierarchical decomposition of the house on the specified subsystems proceeds from the ready house, but construction is conducted not in such sequence.

An apartment possesses a complex of functional properties and can be considered by definition as an element of a house. However, if to carry out physical partitioning the brick house on apartments (it is equivalent to destruction), it will not be possible to collect back the house from these subsystems. Construction of the brick house is carried out not by apartments, but by bricks. The simplified algorithm of the construction of a house is reduced to one basic operation: a brick + a brick. The brick contacts the next bricks until the perimeter will become isolated and there will be no following number (layer) of bricks. Each new number keeps within atop of another, but not at once the layer on a layer (it only in ideas), and each new layer, also as well as previous, "grows" in the form of sequence of bricks. The house grows by brick numbers. The apartment on the 9 floor cannot arise before an apartment of a ground floor, but at the system analysis this fact do not consider.

The brick house concerns to systems which "grow", as organisms, simultaneously with their elements. The house can be disassembled on separate bricks and again to collect. Certainly, the brick is an element of the house, but whether it is possible to consider an apartment as an element? According to the definition resulted above, the apartment can be named an element, but it cannot be withdrawn, not having destroyed instantly the house. **There is a necessity to distinguish «organistic» and mechanistic elements. Mechanistic elements can be withdrawn from a system and to return back without loss of properties systems (regeneration).** For example, the human collective can be updated, replacing people. The car is possible to repair, replacing details. It is possible to carry out change of persons organs, etc.

An «organistic» element carries out the certain function, but cannot be taken from a system and is returned back without destruction of system. Mechanistics can depend on technology of withdrawal. When ways of human bodies change have been developed, heart became possible to rank as a class of mechanistic elements. It is not necessary to be frightened such

subjectivity of judgements. All in a system thinking has a subjective character. If subjectivity promotes the decision of problems it is useful as a reception of thinking. A.Bogdanov marked, that a specialized element separated from a system loses ability to regeneration. But the multipurpose element is capable to begin an independent life.

In an example with the house, brick is an element of the equal age to walls of the house. Construction of the house has begun with the first brick and has ended with last brick. We mean not a concrete brick, but its abstract image, «a brick - an element». We shall name such element Hacuenthim (first-born). For example, cells are nastzent elements of organisms, and a wisdom tooth, a signboard on the house - not nastzent elements.

The concept «nastzentness» is not necessary for static, not developing systems, but for is system - the evolutionary analysis such concept can benefit (see chapter 5). During development the nastzent element presents during all life cycle, and thus can change itself. If to build the house very long and for this time the manufacturing techniques of a brick will evolution the top floors will be combined by other bricks (but nevertheless bricks). If on the top floors bricks will connect by steel armature, and on bottom are not present, the armature becomes a new element, we shall name it associated.

Ukhtomskij A.A. has entered a concept of a functional organ. This combination is functionally of various elements. The given direction has been developed by P.K.Anokhin [14, 15] investigated neural systems of a brain. He gave the definition to a functional system. «A system is a functional set of material formations, **interact to an achievement** of the certain result (purpose) necessary for satisfaction of initial need». The combination of processes and structures groups incorporated for achievement of the purpose, has received the name of a functional system. The functional system joins only those elements which promote achievement of the purpose. All elements and the functions which are not helping this result, are mentally eliminated.

So, at creation of a system it is necessary to define elements and communications. Elements do not represent simple crushing object on parts. In turn, parts should promote the wholesystem purposes. Hence, to dismember on elements, it is necessary to know a system preliminary.

So, there is a vicious logic circle. To construct a system, it is necessary to know properties of elements and that the nobility of property of elements it

is necessary to know a system. Such problems are solved by a method of consecutive approach. The hypothesis first expresses properties of elements and the system is under construction of them. The received system is checked on adequacy, and changes are made to it. The changed system again dismember on new elements of which again a system is built. This procedure of "adjustment" of a system will repeat until the system adequate to the validity will be constructed.

In such a way imitating models of complex objects on the COMPUTER are created. The system is created in an information field of a computer, but preliminary it arose in consciousness of the programmer. It is obvious, that the program (model) is not a real object, but only a way of its reflection in an information field of a computer. A robot - welder, is an imitating model only of one human function, but on other parameters it is absolutely not similar to a person. We shall result one more analogy.

A person is a real object of the nature. Subconsciousness sensually perceives the person as an image (a portrait, a facial expression, etc.). The consciousness dismembers the person on systems: blood, respiratory, digestive, bone (skeleton), etc. which in a reality cannot separately exist. Any of the named systems (mentally taken of the person) is emasculated, deprived many natural properties. If to carry out return reflection and under mental projects of systems to create their material doubles, to synthesize the person it will not be possible, since during repeated reflection the part of the necessary information will be lost.

Apparently, the element, communication, border and purpose of a system are defined by results of rational activity of the person. It is visible, that GTS yet the theory, and a complex of the concepts which are being development.

Invariants of GTS. The modern science has saved up many facts from which it is possible to deduce the basic postulate of the system approach. Similar principles of the organization, functioning, development and evolution are peculiar to complex objects of the different nature. This idea has been stated by Bogdanov [30].

For example, cybirnetist N. Wiener has managed to show, that coordination in alive organisms and machines is carried out under similar laws. Efforts of scientists, mainly biologists and physiologists among whom especially it is necessary to note C.Brown, R.Sellers, Kastler, E.Mayer, C.Uoddivgton, I.I.Shmalgauzen, A.A.Lyapunov, P.K.Anokhin, N.A.Bernstein, B.F.Lomov, etc., methodological principles on which studying of objects of very high level of complexity should be based have come to light. These efforts have received a strong support from a developing cybernetics which in the most abstract theoretical part is closed with the general theory of systems [147].

Shmalgauzen considers, that to challenges is better to apply the cybernetic approach. "The cybernetics offers uniform terminology and a uniform complex of concepts for representation of systems of the most various types. The cybernetics finds out the big number of interesting and promising parallels between a machine, a brain and a society. And it can create a common language, by means of which opening in one branch of a science can be easily used in other branches" [240, 109]. However the cybernetics has taken a great interest in negative feedback and problems of homeostasis preservation. The synergetrics investigates a role of positive feedback in development of complex objects and supplements cybernetics.

Thus, the system point of view starts with representation about object as functional essence and leans on the thesis that at various, concrete structural distinctions, objects with complex enough behaviour can find out similarity in main principles of functioning and development. The given monography is devoted to this problem. Therefore research of biosphere development laws can facilitate understanding of the mankind purposes of social development.

Conclusions.

1. **A system** is a version of some object model reflected in consciousness of the subject in the form of interconnected elements set, generating a certain integrated, purposeful process. The system results from the rational activity of the person.

2. **A system sight**, as well as logic, is a display of the natural mechanisms of research of an objective reality hidden in subconsciousness.

3. **Communications** (interaction) between real objects, are realized in the form of triune streams of substance, energy, information (SEI streams). Communications are inseparable from objects.

4. **An element of a system** is a fragment of subjective model possessing properties to promote an achievement of the wholesystem purposes, possessing a functional autonomy and set of necessary communications.

5. **A border of a system** represents not geometrical, but the functional characteristic. The structure of the system subjectively joins the purposeful elements effectively promoting achievement of the wholesystem purpose.

6. **Complexity of a system** is a multicriteria parameter depending on the subjective purposes of the researcher.

7. **A system sight**, as well as logic, is a conscious display of the natural mechanisms of an objective reality research "sewn up" in subconsciousness.

8. **Emergention** is the new information appearing at a combination of elements and communications of a system.

9. **The purpose** is a direction of activity of the open nonlinear system, an equifal condition (finishing only some stage of the evolution).

10. **GTS** is not the theory yet. GTS represents the complete set of very useful concepts which is in development.

11. There is a necessity of GTS development in a direction of « Synergetic theory of systems » (STS). It is offered to perceive a system not as a static structure, but as a process in four-dimensional space - time.

12. Similar principles of functioning, development and evolution are peculiar to complex objects of the biological, physiological, socially-psychological nature.

13. Synergetic concept of development is supplemented with new types of elements.

•The mechanistic element is a functional part of a system which is possible to withdraw and return physically back without loss of properties (regeneration).

•Organistic element cannot be taken from a system and is returned back without a destruction of the system.

•Nastzent element has the age equal to the age of the studied system.

14. STS leans on the concept of time development four-dimensional nastzent element, which has begun in the past and proceeding till the moment of supervision (film).

4.2. The general theory of system communications (GTSC).

Communications of an object characterize the plan of a structure, its architecture. The plan of an object structure is often replaced with the concept "structure". The structure shows rather steady order, the law of elements composition [208]. By the structure of a system a set of basic system units and steady interrelations between them, and also interrelations between hierarchical levels are understood [147]. It is possible to consider, that the plan of a structure, a structure, a system and a model are essence synonyms. It is possible to make attempts to find differences in these concepts, but it does not promote a development of generalizations. Set of terms for generalizations harmfully as creates an information "noise".

Coherence of system elements is an object of discussion. Objects of the World exist in the certain attitudes with each other. How does the concept "communication" differ from the concept "attitude"? A.I.Uemov considers, that communication is a special case of attitudes [210]. However "mutual relation" "interaction", "interrelation", in the essence coincide with each other.

If to approach to this question from the point of view of the observer presence it will appear, that the attitude is a reflection of communication in consciousness of the observer. Communication is primary, and the attitude is secondary. **Communications (interactions) between real objects are realized as a result of an exchange of substance, energy, information (SEI).** Often in consciousness the material basis of communications is lost, and from them there are one attitudes. Communications can exist without the observer, and attitudes arise in consciousness. Attitudes represent an idealised model of communications. We shall furnish proofs.

If two objects of different weight are placed into separate isolated chambers there will not be an exchange of substance and energy between them, but attitudes will be kept, for example, one subject appears harder than another one in 10 times. To such erroneous conclusion people come because do not consider a presence of the observer. The subject knew the weight of each object up to a premise in chambers. These attitudes remain in memory of the subject after a premise in chambers. Models of objects continue to cooperate informationaly in consciousness of the experimenter that is realized by him as attitudes. But for the extraneous person between subjects either attitudes, or communications are not present. **So, attitudes are value judgment of existence of not noticed, present or last**

information communications. The last communications (virtual communications) are kept in memory.

For example, the attitude between pressure (P) and temperature (T) some volume of gas is described by known equation PV = RT (V-volume, R-a constant). It is known, that increase of molecules movement speed leads simultaneously to increase of pressure and temperature. Pressure is a result of molecules impacts about walls of a vessel, and temperature - impacts of molecules about the thermometer. Therefore the formalized attitude in the essence reflects interaction (communication) of molecules with walls of a vessel.

The concept communication is not worked enough in the philosophical and scientific plan. In ancient philosophical doctrines the World was considered mutual connected. Unilateral communication cannot be Sadovsky [190] vainly analyzes a variant of unilateral communications, they do not exist in the nature. On any action always there is a counteraction (not always symmetric). Movement of an electric current tests resistance (the law of Om).

In the classical mechanics this fact is expressed by the law of equality of action and counteraction. An attempt to change a speed of movement of a body causes counteraction (force of inertia). Pressure upon a support causes reaction of a support. Movement in dense environments is accompanied by forces of friction.

Interaction is a process, but not of a condition. On macro level interaction is carried out by an exchange of triune streams of substance, energy, information. For example, the electric current represents an electrons movement. Energy of steam is a movement of water molecules. Mechanical energy is a movement of a body (for example, a hammer), and light, (an electromagnetic wave) - movement of photons. Power streams always accompany with streams of matter.

The information also is transferred by means of substance, therefore all streams are triuned: substance (S) + energy (E) + information (I) (SEI - streams). Cable messages are faltering movement of an electric current. Light telegraph - the modulated movement of photons. The information is always transferred in the form of movement of a matter with all accompanying counteractions.

In physical understanding "stream" concept is not unequivocal. It can be presented as moving of substance to space from one place to another. If in the closed vessel to pump up air, pressure of air will grow in a vessel. We observe uniform process during which movement of air (stream) is transformed to process of change of inwardness of a vessel (growth of pressure). Change of inwardness is consequence of a stream from the outside. It is possible to show, that any moving is accompanied by change of a condition of a system.

When we heat up one end of a metal core and warmly extends along it is accepted to speak, that on a core there is a stream of heat, but thus there is no a material moving along a core. Kinetic (chaotic) energy of molecules grows and the temperature front moves. The condition of substance, but not substance moves. The sound (a data carrier by means of distribution of fluctuations to air) also is not accompanied by carry of substance (by "wind").

But there are examples of energy distribution in the form of streamsmovings. The electric current, energy of falling water are streams of moving. However all versions of streams are accompanied by change of a system condition, and moving to space is only a special case of a system condition change. We shall show it.

If any weight moves from one area of space to another the density of substance in one part of the space (changes the condition of a system "weight-space") decreases, and the density in other part increases. Process of a system condition change "substance-space" though it habitually name moving is observed. So, any stream is a process of a system condition (parameter) change.

It is known, the more the concept is generalized, the more number of "things" and processes it is capable unite. For example, the concept "subject" unites both a person and a chair. Such generalizations were searched by A.Bogdanov [30]. Concept SEI a stream unites set of the isolated representations of the systems theory.

Configurations of SEI streams are various. For example, entrance streams of resources for industrial production are always discrete. The raw material periodically in the portions acts on a warehouse. Communication between people can be made by means of letters (a portion of the information). Configuration of a SEI stream is informative, as the Morse alphabet. Optimization of system work consists not only in an establishment of necessary communications, but also in optimization of configuration of SEI streams. We shall consider application of SEI streams concept on examples. Economics can be presented as a process of an exchange by streams of raw material, the goods, money (information). The exchange of substance in organisms, biotzenoses, biosphere, as well as economy of mankind, is a stream process too. It is obvious, that economics is a continuation of a natural metabolism, but by means of other means.

In logistics (a science of rational management of streams) intuitively for a long time do not distinguish a stream - moving from a stream - change. On a way of movement of the goods there are warehouses where moving temporarily stops, but logistics consider such condition as a version of a stream [194]. It is obvious, that in a warehouse process of a condition change of the goods (substance) proceeds. There is an ageing, damage, packing, i.e. the stream of moving comes to an end and the stream of change proceeds.

Let's consider manufacture as means of streams transformation. On an input of industrial system a stream $S_1E_1I_1$ acts. On an output we have a stream $S_2E_2I_2$. Manufacture includes a process of energy leading to a subject of work. The information (knowledge of the worker, the covputer) operates a stream of energy, adding to a subject of work the new information. Brought energy, having made the business, can turn to heat, but the remained part of substance and information containing in it get the status of a new product (goods). So, the goods represent some new attributive information. Buying a sculpture from a marble, we pay not so much for a marble, how many for an image, the form, i.e. for the information represented in a marble piece. The aesthetic component of the goods has the information nature. Overpaying greater money for the rare goods, we pay for the information on its rarity.

Let's consider an essence of the concept "consumption", proceeding from the concept SEI of streams. The enterprises consume streams of raw material. Buyers (end users) consume food, subjects of a life. On an input of consuming system a stream SEI acts. At any open system to eat necessarily output. Target streams of consumers name waste. They get in an environment (dumps, drains, gas emissions). Waste can become raw material for consumption by alive organisms. If the stream of waste does not find the consumer there is an ecological crisis. The stream of moving loses the activity and turns to a stream-process (long change without moving to space: corrosion, dissolution, rotting, etc.). Apparently, the stream paradigm naturally connects economy and ecology. On a background of an approaching ecological accident actually coordinated management not only economic streams, but also biospheric processes.

It is possible to consider the science about the finance, about movement of money in economic systems from positions of a stream paradigm. An exchange of substance (barter) is the most ancient mechanism of the organization of societies (both animal, and human). Exchange stream processes are those communications which create purposeful system. In exchange SEI streams prevails a material (S) component. During evolution of exchange processes the mankind has invented streams of money symbols of substance. Money in any embodiment (paper, coins, electronic and so forth) have remained SEI streams, but the information component (I) became a dominant. Therefore consider, that money represent streams of the information on presence of material benefits in a society as a whole and at separate individuals, in particular. The term « financial streams » for a long time is legalized in economy. Money carry out function of a measure of cost and a measure of utility. Examples can be resulted and further, and not only for "alive" systems, but also for "lifeless". For example, Vernadsky investigated circulation of streams of chemical elements in a biogeosphere [39, 40]. However we shall be limited to already resulted examples.

In connection with triune SEI streams it is necessary to consider the classification of systems in the form of isolated, closed and opened as incorrect. Triunity SEI streams excludes an opportunity of an exchange only by energy (closed systems). The power stream is realized through change conditions (moving) of a substance. At dense connection of two metal hot subjects, the thermal stream proceeds and diffusion of atoms (welding) is carried out between them. We shall show, that even the deffusion stream of heat is always accompanied by process of a substance change.

Let's mentally create the closed system (through border of the closed system by definition can pass heat). Chemical process (for example, burning) in an environment is accompanied by allocation of heat. Warm through border gets in inside, raises temperatures of the internal environment that can be accompanied by change of a phase condition. So, process of movement of molecules in an environment provokes process of movement of molecules in the internal environment. Two processes are connected among themselves, hence, they can be considered as a system unity, as an integrity, as a relay race.

In connection with stated a limitation of a sight at evolution attracts attention. As evolution is understood as development of a substance component (S), but energy (E) and an information component (I) are ignored. We shall try to correct this omission. **Representation about SEI** streams and SEI maintenance of all objects of a material world creates «an axial line» of the global evolutionism. Development of substance (S) always should be accompanied by development of energy (E) and information (I). Triune evolution SEI takes place which consideration will be lead in the subsequent chapters (more in detail see 5, 6).

So, the uniform skeleton on which it is possible to string diverse private displays of a science about systems of the various nature (management, economics, ecology and so forth) is shown. In a basis of any dynamic systems triune SEI streams lay which proceed in material environments.

In any systems the quantity of communications essentially exceeds the quantity of elements. For example, every neiron a brain has tens thousand communications. Each person is connected with thousand people. Biospheric communications are difficult for tracking.

Reaction of physical and chemical system to external influence is carried out by means of reorganization of internal communications (principle of Le - Shatelye - Brown). Reorganization of communications at constant element structure can lead to radical changes of system properties. Compare properties of diamond and graphite. Both substances consist of carbon atoms, but they are organized by different communications. Movements of an animal are carried out by means of reduction of muscles (change of communications of cells). The nuclear kernel is kept from disintegration by an exchange (communication) by attics. Hypothetical quarks in nucleons are connected by processes of gluons exchange. Processes in economics are processes of an exchange by the goods, money. The biosphere is united by trophic and other communications. Any internal movement is accompanied by change of communications.

So, all kinds of an interaction are realized through the movement of the substance possessing in weight, charge, information. Movement (communication) always occurs « from item A to item B », from one element to another. Hence, communication cannot exist without elements, as well as elements without communications. There is a representation about "centaur" an element - communication. To strengthen this statement it is possible as follows.

Communication is a SEI stream on some channel. The channel is always material. For example, the sound is by air transferred from a molecule to a molecule. The post liaison channel represents a set of intermediaries and transport systems. So, the liaison channel is a set of the connected elements. Any subjectively chosen element in turn also is the organized internal and external (an input, an svstem output) communications. It is possible to open a consistently structure of hierarchically located elements (a principle of a nested doll), each time finding out new microcosm. For example, the biosphere of the Earth is united by a set of communications between biotzenoses and organisms. Organisms, in turn, represent a set of communications between internal bodies. Internal bodies are the connected cells. Cells can be presented in the form of molecular communications, and a molecule - in the form of units of the connected atoms. The atom exists owing to interactions between a kernel and electrons. The kernel is a complex of the connected nucleons. The nucleon consists of three connected quarks. What is further? Where to be found out the first indivisible element, true atom which should combine in itself concepts "element" and "communication". The modern physics has not defined yet with it, therefore there is an area opened for philosophy.

Representation about scientific knowledge as the system of concepts and models in which any part is not more fundamental, than another, has been formulated in 1970 by physicist Dzhefri of Chu in the form of so-called butstrat - theory. The butstrat philosophy not only rejects an idea of fundamental matter bricks, but at all does not accept any fundamental substances, constants, laws or equations. The Universe is considered as a dynamic web of interconnected events. Any property of any part of this web is not fundamental and follows from cumulative property of other parts, and the general coordination of their interrelations defines structure of all web communications [92].

Movement can be realized in the form of fluctuations (wave) or streams (current). Waves are carried out by back and forth motions of substance. But streams represent the unidirectional movements. However in the closed system movement in one part can be only time or seeming. Therefore always there should be counter streams. If in pool to drive water to one part it is possible to see streams of water in the opposite direction too. Counter streams of water are feedback.

The output of one element is always connected with an input of another. Communications not necessarily should be constants, continuous. There can be discrete communications.

There can be communications in a potentiality. The person in work keeps a virtual communication with a family. The channel can work in a "direct-flow" mode (for example, as in a gullet). It can be realized and « feedback - forward » a mode (breath, a breath - an exhalation).



Fig. 4.2.1. The elementary systems.

The minimal system, by V.N.Sadovsky's [190] opinion, are two elements and a communication between them (fig. 4.2.1.A). Chains of communications (fig. 4.2.1.B) are made of them. However it is difficult to agree with it. The open systems should have entrance and target communications with an environment (fig. 4.2.1.C) besides of this. It is possible to present the elementary closed system from one element and one communication if an output of an element to connect with the input (fig4.2.1.D).

The limiting system is an association of an element and a communication in a uniform "centaur". Closed in itself, the homogeneous, indivisible, material liaison channel represents « an element - a loop » (fig. 4.2.1.E.). But it also should have an input and an output (in other way it is not an element). Therefore in the figure "element-loop" cooperates with other "loops".

The communications represented on fig. 4.2.1, are ideal models. Real communications in the nature have a material filling. More often the liaison channel is represented localized and directed. (Pipelines, roads, electricity cables, rivers, firm, liquid, gaseous environments and so forth). But real channels always lose a part SEI. For example, the stream of hot water localized in a volume of a pipe, through isolation loses heat. Outflow of an electric current from a conductor also heat up an environment, dissipate through electromagnetic radiation and etc.

In nonlinear environments it is possible to provide a relative localization of streams (thermal and electric isolation). In isotropic environments flowing of streams occurs on all accessible channels. For example, in the isotropic environment the thermal field from a dot source has a spherical symmetry. Electric and gravitational fields from dot sources also are symmetric.

Communication always contains the transmitter + the channel + the receiver SEI. For infringement of communication it is enough to liquidate any of the named elements. In a complete material world to liquidate communications completely is impossible. It is possible to make them of little use for the purposes of a system. But for viable system any communication, and effective is necessary not. Therefore effective communication is carried out through the structured channel laid in the material space.

Organization of an object can be characterized by a degree of orderliness of communications. The less diffusion communications in the object, the higher a degree of organization. We shall name this organization «dissipative».

However not all liaison channels promote to an achievement of the purpose («a swan, a cancer, and a pike»). The target degree of organization can be characterized by a share of communications of the system promoting achievement of the purpose.

Having taken for a basis the stated idea, it is possible to formalize as a first approximation concept «a degree of organization» $D_0=K_d$ K_t . Where K_d - a share of the localized communications; K_t - a share of «target» communications. It is possible to specify the equation, entering in addition the factors considering a degree of participation of each separate communication in achievement of the system purpose.

Systems of the World used be considered from positions of their structure. The structure is a topology of communications, **therefore we shall try to construct a hierarchical system of world communications**.

At a subnuclear level strong and weak interactions operate, which physicists represent as an exchange of gluons and mesons. In a kernel of atom nucleons exchange mesons, and it keeps them from disintegration. It is possible to present figuratively the jugglers, thrown subjects. Process of exchange provides them with work and keeps a collective from disintegration. The exchange of subjects occurs through space (air) which
is perceived by the spectator as emptiness. Physicists also consider, that mesons move in emptiness. We shall think, that emptiness is an image yet of not understood material environment. Long time vacuum also identified with emptiness, but it has appeared, that it is a complex material environment. From vacuum the World [108, 238] was born.

Strong and weak interactions act distances commensurable with nuclear kernels and do without "visible" intermediaries.

An atom represents a system of a large size where electromagnetic interactions, which can extend on infinite distances in any environment start to dominate, but weaken in inverse proportion to a square of distance and dielectric permeability of environment. They are explained by exchanges of photons. Electromagnetic and gravitational communications are the longest, diffusion, do not have clear channels of distribution in homogeneous environments.

Except of electromagnetic forces there are **forces of inertia** in an atom. The nuclear structure is counterbalanced by electric forces of an attraction and centrifugal forces of pushing away.

Stability of a system testifies to homeostasis processes, with a presence of negative feedback. The quantum mechanics explains "eternal" electron movement on an orbit by that loss of their energy can occur only in the portions (quantums), and an electron "smooth" falling demands energy continuously which electron cannot do, therefore is doomed to eternal movement on an orbit, movement without expenses of energy. In this explanation there is a lot of unclear.

Recognizing stability of an atom, we should recognize an opportunity of eternal movement, a perpetuum mobile or to assume existence of inflow of energy from vacuum, to give an electron the status of the open system. It is possible to ask one more question. If an electron cannot smoothly leave the orbit, but it can appear jump in the next orbit (radiating quantum of energy) where it was in a condition of transition? May be in other measurement?

Nuclear units, molecules, exist, owing to electromagnetic interactions. Molecules are connected in a circuit, as people in a round dance. So atoms in crystals, groups of molecules in polymers, all macroscopical "things" are connected. Forces of friction, forces of elasticity, chemical interactions - all this display of go-ahead electromagnetic interactions.

The length of communications increases due to go-ahead transfer of interactions. Relay race is seen in wave processes too. Fluctuations are transferred from a particle to a particle, as in a mail on changes, in effect of a dominoe, in a fibre, in a train. Lengthening of electromagnetic communications became possible only at occurrence of the ordered material channels. Electromagnetic interaction in strongly nonlinear (heterogeneous) environments can become channeled. In technics magnetic guides, wave guides, optical paths, electric mains, and so forth are known. Such channels it is possible to see in the nature: the rivers, cracks in an earth's crust, space downpours of the charged particles in the Earth magnetic sphere. Downpours of electrons in an atmosphere (lightning). Sea and atmospheric currents, volcanic streams of gas, a liquid, ashes. Routes of birds, fish movement, animal tracks. In alive organisms during evolution communications extended, became addressed. For example, the humoral system (ancient) works on streams of a liquid (blood, lymph) in organisms. The information (chemical) is thrown out in a stream which on channels reaches all subsystems. The information is taken with any subsystem requiring it. The humoral system was added with more addressed nervous system. The signal on a chain of neirons reaches the addressee. Radiorelay lines work in the same way.

It is important to pay attention, that evolution does not eliminate fundamental, ancient ways of the of communications organization, but, combining them, complicates, builds hierarchies of system communications.

It is possible to tell, that new elements arise on the basis of new combinations of communications. Strong, weak, electromagnetic and gravitational interactions are a subject to a combination. The directed movement of the piston is consequence chaotic movement of molecules that actuates a steam locomotive, etc. Among "elementary" forces in macroscopical scales only gravitation works.

Communications can appear as a result from material intermediaries (gluons, mesons, photons) moving or as a result of cooperating elements (molecular interactions, collision of spheres, human mutual relations, biospheric processes, etc.) moving. Both types of communications coexist. At an atomic level of mutual relation of type electrons - the kernel, a nucleon - a nucleon is carried out only through an exchange of intermediaries (photons, mesons). At a molecular level their combination already takes place. Cooperating molecules all over again should approach, then incorporate, exchanging electromagnetic quantums or electrons.

In an alive cell streams of albuminous molecules, PHK also circulate, waters, gas and so forth Interactions of large organisms are perceived by consciousness of the person mainly as moving of bodies, parts of a body though in their basis fundamental, elementary interactions also lay.

Owing to small density of environment space objects seldom collide with each other, but constantly cooperate through gravitational fields. In zones of high density of substance (on planets) mechanical collisions become more probable. The role of collisions increases in formation of systems. For example, speed of chemical reactions is proportional to concentration of substance. Concentration of the population in cities accelerates growth of culture, increases rates of growth of manufacture.

And in economic systems it is possible to find out two types of interaction. Direct interaction (the manufacturer - the consumer) and indirect, exchange (the manufacturer - the intermediary - the consumer). For a dialogue by a voice all over again it is necessary to approach on accessible distance, then through wave process (voice) to finish interaction. However at a presence of phone it is possible to hold communication on any distance only by means of wave process. Between the manufacturer and the consumer interaction can occur on any distances (transfers the goods - money).

So, interaction by means of mechanical contacts in a great degree realizes a component «SE», and in small - "I", i.e. the stream «SEi» takes place. If communication is conducted by phone the variant «sel» is realized. The electric current of constant frequency and a pressure is an exemplary model of the channel of power communication and can be symbolized as «sEi».

The power «sEi» liaison channel passes a uniform, homogeneous stream of substance with high kinetic energy. For example, overheat steam or a waterfall.

The material «Sei» stream represents a uniform stream of the big weight. For example, a waterpipe for drink, the conveyor, commodity circulation.

The information «sel» processes are the fastest, then follows power and material ones. Information streams contain a minimum of substance (weight) and energy, but are sated by the information (for example, radiowaves). Very low maintenance of substance (weight) allows to move them with great speeds (speed of light). So, communications can be characterized by a number of factors: structure of a liaison channel, long, purposefulness, dissipartiveness (loss of the maintenance, filling by the another's maintenance), SEI maintenance, conductivity, raicing, attenuation on components "S", «E», "I". Communication can be carried out through one channel or through contrary-parallel channels (multychannels).

Conductivity of the channel can be nonlinear on any components of SEI. Communications can be straight lines, indirect, parallel, consecutive, entrance, target, hoop. There can be asymmetrical communications ("there" more strongly, than "back"). Streams can be pulsing, discrete. Properties of communications changed during evolution, therefore we shall **consider evolution of communications**.

1. The length of address channels of communications increases in process of integration of "things". Over kernels of atoms are "dominated" with short communications. In atomic and molecular units electromagnetic communications get the importance. Lengthening of fading electromagnetic communications in complex units is carried out by "go-ahead" way. For large, massive objects value of gravitational communications increases up to space scales. «Long communications » require "service". In long communications raised "potential difference" (the law of Om in the electrical engineering) is required. Long communications demand the raised expenses of energy and actions interfering their destruction. Owing to loss of durability of long communications too greater systems lose stability. Ecologists consider, that at accidents in biosphere large organisms first of all perish, and monocelled and the elementary survive.

2. In process of complication of objects and lengthening of communications their durability decreases. To destroy communication between nucleons, the temperature in billions degrees is necessary. To destroy electromagnetic communication in chemical compounds there is enough temperature up to 1000 K. Protein molecules degrade at 330K. The alive organism can be lost from a dot injection. Social systems collapse because of internal contradictions, but these processes cannot be estimated already from the power point of view. Stability of social systems is defined not only by durability, but also by information, administrative power.

3. During evolution the degree of specialization and the organization of communications increases. The quantity of diffusion communications decreases. Instead of them there are various, address, specialized communications. For example, the electromagnetic field of the

isolated charge (electrone) has a circular symmetry. The field of more complex molecule can be asymmetric (dipole). Interaction between molecules is stochastic, many tests and mistakes occur until complimentary mutual position arise. But heterogeneous catalysts work purposefully, "choose" the necessary molecule, develop it in the necessary position and "sew". Enzymes of alive systems are even more unique on the selectivity. Transport systems of organisms are localized and deliver resources (SEi) on a blood-groove, lymph stream to all cells. Later nervous systems become purposefully addressed (sel). In nervous fibres long communications goahead from neurone to neurone are carried out. But in a brain long direct communications of neuron with other neurons start to play a great role. 104 communications. Addressed can have about Every neuron communications between people reach the size of a globe.

Self-organizing can be presented as a process of communications integration. A lo of diffusion communications "merge" into localized channels. For example, jets of a rain borrow all space of air. On the ground water gathers in streamlets. Streamlets flow down into the rivers. The rivers converge at the ocean. This process goes spontaneously. Streams wash out trenches for themselves, the rivers - channels, reducing probability of diffusion flow.

Social formations of mankind also have not avoided processes of communications channels. Waste wells in villages are in regular intervals disseminated on territory. In large cities drains from each apartment are consistently integrated in a system of the water drain, modelling natural water-drains. Industrial streams, transport systems, systems of water supply, gas supply remind the fractal organization of bronchial tubes, system of blood supply. Self-organizing of streams can be seen and in chemical processes (oscillatory reactions of Belousov-Zhabotinsky [75], and in convection streams of a liquid (Bernard's cells) [73].

Each person can cooperate with other people by a lot of ways. On manufacture people are incorporated in groups, collectives. Between collectives new communications which quantity is less, than between set of the isolated people are formed. The generalized communications bear the raised loading. They work instead of the abolished communications that creates economy on energy and information. It is not excluded, what exactly it and defines an arrow of evolution.

So, new system communications arise on the basis of former. Means of communication between collectives essentially do not differ from

communications between individuals. Collective communications provide the average interests of collective and are less various. At disintegration of collective, public relations break up on individual. **Communications do not disappear, they are integrated and differentiated in the big variety (the law of primary communications quantity preservation?).**

4. Evolution of alive organisms is accompanied by increase of communications localization degree. The alive cell communicates with environment through set of times on all surface of a membrane. In metaphytes there is a localized gullet, an anal aperture, respiratory ways. Rudimentary ways of the communications with an environment are kept also. On a person a cell of a leather remind membranes of a cell. Some reptiles are capable to absorb water through a leather of paws, to breathe all surface of a leather and so forth So, reduction of communications quantity occurs not as a result of their disappearance (differently, whence they would appear at systems destruction), in summary associations, aggregation, "twisting" of set of communications. As analogue the rope weaved from set of fibre can serve. The rope can be weaved and unwaved. Properties of a rope differ from property of a simple bunch. Evolution can be presented as «weaving of ropes» from communications. Cotton wool is an image of chaos, but a fabric weaved from a cotton fibre, there is a symbol of the order.

In new systems there are new communications and new emergetic properties. Mechanisms of occurrence of new communications are poorly studied. Usually are limited to simple ascertaining of this fact. Not pressing in the analysis of types of communications, it is possible to make a generalization, that all "new" communications are a special combination of "old", diffusion communications.

5. Occurrence of a network of address liaison channels increases probability of short circuit of contours of positive both negative feedback, hence, and occurrence of managerial processes (гл.3.4.) in a substratum. The target signal of some system, extending in the continuous environment, can always return on an input of the same system (effect "echo"). If the target SEI stream strong enough also is available the channel of a feedback of high conductivity on an input the signal will return, capable to overcome a threshold of sensitivity of a system. At the certain phase parities (a positive feedback) there will be «a microphonic effect», the system will start to generate a new quality. This effect is of great importance in innovative processes, therefore it should pay special attention. For occurrence of a new generation, the positive feedback should "punch" the channel of sufficient "capacity". For this purpose following conditions should be satisfied. The target SEI stream of some system should be of necessary capacity and sufficient duration. Besides there should be a channel of a feedback. At absence of the effective channel the target SEI stream can is useless to be sprayed in the space and on an input in the form of an echo too weak signal will return to cause generation of a new quality.

For creation of a powerful target SEI stream the system should concentrate a resource. If it is impossible, that, having settled a stock, process will stop. For example, heavy atoms break up only in "hot" bowels of stars. Concentration of hydrogen in stars leads to synthesis of heavy elements (including to carbon - to a basis of a life). Concentration of heavy elements in planets of terrestrial type has allowed to arise a terrestrial life. The biosphere is concentrated in a thin layer of an earth's crust. For realization of nuclear and chemical reactions it is necessary to break a power potential barrier. The mutation in DNA occurs at strong power influence (irradiation). Destruction of any system demands overcoming a threshold of durability, concentration of efforts (a knife, a chisel, an axe, a hammer, a detonator). Ignition begins at the certain concentration of heat (temperature). A passionar heat leads to formation of ethnos. Capitalism has arisen at concentration of the capital, labour, knowledge.

Concentration of "short" communications increases with high population density in cities. Cities became the centers of bourgeoisie origin, generators of engineering thought and technical systems, concentrators of authority. The victory of attacking army is not possible without concentration of alive force, technics and so forth. Nuclear explosion occurs only after achievement of some critical weight of uranium. At a stretching of a rope "weak" fibres in the beginning are broken off, the pressure of destruction avalanchely increases, process develops. Market. competitive attitudes at resources concentration easily pass to monopolism of the strongest. The cancer tumour concentrates blood vessels. So, for transformation "old" and occurrence "new" concentration SEI is required.

6. On a background of specialization elimination of "superfluous" communications occurs. For example, in gases types of all molecules movement are realized. Rotary movements of molecules are minimized in liquids, there are limited forward and oscillatory movements. In crystals there are only oscillatory movements. In organisms there are hierarchical

communications of coordination (sel) and horizontal communications of subcoordination and coordination.

7. As the material world is discrete and energetically quant and **SEI streams are always discrete, non-uniform**. At electrons movement on conductors it is possible to measure « shot effect », non-uniformity of an electron stream. In the isolated vessel pressure of gas flucts, from - for heterogeneity of movement of molecules. Any homeostat works in an oscillatory mode. SEI streams periodically change quantitatively, qualitatively, cyclically.

During evolution, with complication of systems duration of oscillatory cycles of coordinate increases. Biospheric cycles are stretched on hundred millions years. Population waves are shorter. Cellular cycles are estimated in minutes. Obviously, at designing control systems it is necessary to conduct a search of optimum rhythms of SEI etreams pulsations in liaison channels. In this direction works are conducted (I.I.Blekhman «The vibrating mechanics»).

Among quant interactions it is possible to consider the "disposable" interrelations working only on start of started process. At shooting in the purpose interaction in a system of arrows - the weapon - the bullet is carried out only at an aiming stage. After a shot communication between a shooter and a bullet stops, but the result of a shot is defined by starting short-term interaction.

The genetic code of an embryo also is a starting condition of its development. The evolution of the Universe started by starting interaction of a singular condition was above considered.

8. **During evolution SEI of communication get an alarm character**. The signal represents a stream of a configuration «sel». For action of an alarm communication the transmitter and the receiver should have memory and knowledge of the maintenance of a signal. The receiver should have a stock of energy and substance for performance of a signal command. Alarm communications can function only in trained systems. For example, the red rocket is a signal of an attack. Fighters have received these data in advance. They have weaponstock and energy for movement. An alarm coordination can be carried to a category of a synergetic coordination. The signal influences «parameters of the order». The equestrian does not learn a horse to rearrange legs, it operates with a signal (a whip and a gingerbread). To operate a donkey it is easier, than a molecule. The donkey itself knows what to do.

The alarm concept of coordination of technical systems is borrowed by the person from the nature. Presence of memory (programs of behaviour) in object of coordination simplifies work of an operating system. The object itself knows the business, it is enough to send a signal of the action beginning and a kind of work.

9. During evolution technological finds usually are not lost. They are kept and new ones are added to them. So the humoral (chemical streams) system of an organism was added with nervous system. The humoral signal is addressed to all and can distribute with streams of a liquid on blood and lymphatic channels. Those to whom it is intended react to it only. In this case the material stream is simultaneously an information channel too.

The humoral control system works slowly, acting on a great distances (the sizes of an organism). The signal extends with a speed of a liquid stream. Such signals, as they say, «on all Ivanovo» were kept and communities of animals too (a shout about danger), and among people (mass media). At more ancient level sources of humoral regulations were chain chemical reactions when one reaction started a circuit of other reactions.

Nervous and humoral regulations are connected. The nervous impulse reaches the addressee more precisely and quicker. On nerves signals extend about speed of 70-120 km/s, but there are also "slow" channels of 0.5-2 km/s. Probably, these systems have different evolutionary age. Possibly, speed of transfer of a nervous signal changed during evolution. On a way of a nervous signal there were retransmitters (amplifiers of a weak signal).

developed on a way of integration Thus. systems of communications, their specializations, increase in quantity and quality of information channels (speed, range and accuracy of distribution of a signal). For example, the quantity of chromosomes in a cell, length of DNA [138], quantity neurons in a brain increased. Organisms use chemical, electromagnetic and electric signals. In communities of alive organisms, chemical signals (smells), sound, light, electric signals (at fish) are widely used also. Sound signals are very widely widespread. In a cat "dictionary" - 21 signal; in pig's - 23 sounds; in hen's - 25 [242]. For reliability liaison channels are duplicated. The nervous channel consists of bunches of the nervous fibres supplementing each other.

Conclusions.

1. Communication is a triune stream of substance, energy and the information (SEI), through the structured material channel indissolubly connected with a source and the receiver.

2. The stream (process) of substance moving is a special case of process of a system condition change «substance - environment». The stream is process of spatial and structural conditions (parameters) change of the supervision allocated system.

3. Concept "element" is inseparable from concepts "process" and "communication". Extremely simple element is represented as an element - a loop.

4. Integration of communications is accompanied by economy of energy.

5. Organization of a system can characterize the specific maintenance of the localized communications promoting the purpose.

6. During evolution in systems the share of the long, localized, address communications increases and the maintenance of diffusion communications decreases.

7. To each level of organization there corresponds the hierarchy of communications. New elements arise as other combinations of communications.

8. Development of substance (S) always should be accompanied by development of energy (E) and information (I). The triune SEI evolution takes place.

9. During evolution SEI communications get alarm character.

10. Evolutionary increase of density of liaison channels increases probability of short circuit of contours of positive and negative feedback, and, hence, occurrences of managerial processes.For this purpose concentration of SEI is necessary.

11. Reduction of communications quantity occurs as a result of associations, aggregation, "twisting".

4.3. A network model of a world substratum.

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Searches of fundamental principles and the base from which the World "has grown", excited mankind always. In a primary substratum the future ordered structures of the Universe as in a block of a marble Rodin's products as in each log is available Buratino is potentially hidden in every wood. The singular condition of the Universe should be improbably complex and informative that from it the person "was showed". Direct empirical supervision of a substratum while are impossible. Therefore unique way of modelling there is a deduction. The present work is aimed at search of invariant principles of the organization and evolution of life.

Researches carried out previous chapters have created preconditions for general generalization - creation of model of a world substratum. For deductive modelling it is necessary to make the assumption, that traced in the empirical world invariants are kept in a substratum too. Both Anaksimandr and Heraclit thought so (see of chapter 1). For example, if all people have a nose it is possible to assume, that the nose is available both for the baby and in the "curtailed" kind at a germ. Actually DNA of a germinal cell has the program of a nose creation at the future person (the "curtailed" plan of a nose). So, the following invariants of the World are known:

1. Integrity; 2. Step-type behaviour; 3. Coherence; 4. System; 5. A structural variety; 6. Hierarchy; 7. Fructality; 8. Openness; 9. Nonlinearity; 10. Dissipativity; 11. Self-organizing; 12. Evolution.

The model of a substratum should contain (as Anaceimandr's apeiron) all without exception listed invariants. Actually invariants can be more since they all are not still opened. For invariants association it is necessary to resolve a number of contradictions.

- The fundamental principle of the world should be both an element and a process simultaneously.
- The fundamental element should be a triune system SEI.
- The fundamental principles should combine a continuity and steptype behaviour.

If in a model it will be possible to unite all listed invariants, it is possible to consider a task solved (a real substratum can differ from our model). We shall try to design the model of a fundamental principle satisfying to the above-stated conditions. As the heuristic help Demyanov V.V. [65] works are served which has refused from a Demokrit model, where the world substratum is presented by discrete atoms move in emptiness. Demyanov's element represents a superstring closed in a loop and combined in "accordion". The beginning and the end (an input and an output) strings are connected. Homogeneous, indivisible, absolutely rigid loop on a stretching is a conductor of movement wave forms. Along a string waves can extend. The loop is capable to unite in itself all attributes of a system. However Demyanov's fundamental elements (loops) do not allocate the opportunity to cooperate with each other. Demyanov's loops have no «seams». Movement is possible only along a string. Transition from one string to another is impossible, that breaks a paradigm of coherence of the world.

The idea about a continuity and coherence of the World was supported by D.Bom (the expert on the quantum mechanics). It is known, that any transfer of energy occurs in the form of quantums (portions). The exchange in quantums of energy connects the Universe. As quantums (communications) are indivisible, it is possible to assume existence of indivisible communications (communications with the minimal length).

The similar idea of space quantum existence expressed by M. Planck. Geometrical image of indivisible communication can be, for example, the party of the triangle, connecting two tops. The party does not quantum, it cannot be a half of party. It may be present or not present.



D

Fig. 4.3.1. A structure of a world substratum network and possible forms of movement in it.

On fig. 4.3.1.A the flat model of a world substratum (real model multivariate), possessing all necessary properties for realization of evolution, development, complication is offered.

The fundamental principle is not microobject, and a network, in size with the Universe, "web" flexible filaments (strings, fibres), not having neither the beginning, nor the end. The network is closed on itself, therefore it is infinite as a labyrinth. The multivariate network is capable to deformations, wavy movements. Cells of a flat network represent triangles with the goffered parties (see fig.4.3.1.A).

The choice of the triangular form proves that a triangle - the minimal geometrical figure. Phylaments, connecting tops of triangles, represent fractals (goffers) which can be stretched and compressed. Tops of triangles model points of bifrucations. Any movement on a network is a bifurcation process because it is carried out on system of branchings. Cells of a network are emptiness, there is nothing there , since there is nothing to place there, except of phylamens folds. The fragment between two points of bifurcation represents the minimal indivisible communication, quantum networks (atom). Outputs and inputs of phylaments are crossed in bifurcation points. The feedback creating processes of self-organizing and self-preservation, are easily realized on a phylament network. The shortest channel of a feedback on fig. 4.3.1.A is noted by fat lines.

The network forms an absolute space, but it cannot be considered as a motionless system of coordinates since any point has an opportunity to move. For example, the hammock can be braided in a plait and peripheral cords will appear in the center. Therefore the designed model does not deny Einstein's point of view about an absence of an absolute system of coordinates, but gives an image of an absolute space which can be bent. In STO a space is a transcendental object.

Heterogeneities of a network are attributes of a substratum (the attributive information) (see chapter 2). Isolation of a network provides conservation of energy and substances. Nothing can fall outside the limits of a network (therefore there are laws of preservation). The network provides simultaneously both a continuity of system of communications and their step-type behaviour.

Nothing can come off a substratum, and all is a topological variety of a substratum. The person also is a ball from topological formations of a substratum (from nucleons up to systems of organs).

An evident analogy of a world substratum can be a web, a bed grid, a hammock, structures of polymers. Hardly it is possible to name a structure of a substratum a chaos, a chasm. Its structure is complex, but by the certain image is ordered. The world, has arisen from a substratum, from the primary order. The order of a macrolevel arises from the order of a microlevel (chapter 2.1).

As an analogue for a model of a substratum for the author the crystal structure of polythene [52] has served. Long polymeric strings (analogue of phylaments) can crystallize in two updatings: crystallits with folded circuits (fig. 4.3.2.A) and crystallits with the extended circuits (fig. 4.3.2.B).



2

Fig. 4.3.2. Versions of overmolecular structures of polythene.

1- polymeric circuit. 2. - crystallit.

In polymers intermolecular "seams" forming continuous grids - analogues of a world substratum are possible.

The mesh world substratum is in a constant movement. In the substratum closed on movement can be only cyclic (either oscillatory, or rotary). Energy always is movement which is shown as a process of phylaments unfolding - foldings. Phylaments kinetics contains a world reserve of potential energy. Division of energy into potential energy and kinetic is conditional, since potential energy represents the form of a movement hidden for the researcher. For example, potential energy of the compressed gas is consequence of kinetic energy of molecules movement. Kinetic energy of a moving body ($mv^2/2$) is expressed by speed of moving (v), but potential energy, for example, the compressed spring has no expression by speed. Potential energy of the compressed spring is equated to the work spent for compression. Result of macromovement and deformation is work. Compression leads to an intensification of internal movement. One form of movement passes into another.

Imagine «a black box» inside of which the flywheel is hidden. Untwisting a flywheel by means of an external drive, we reserve energy which can be used, for example, for movement of the car. A rotating flywheel contains the energy reserved for the future. If we do not know, that the black box contains a flywheel the stock of energy inside of a box can be named potential energy. So, unknown forms of movement correspond to potential energy, and known forms of movement - to kinetic energy.

Phylament is an extremely anisotropic liaison channel. Movement is carried out only lengthways of a phylament in the form of waves (analogue is the stretching of a spring). Points of bifurcations (tops of triangles) divide a network into quantums. It is possible, moving on a system of communications to reach any point of a substratum. It is possible "to go" infinitely on a circle (philosophical infinity). Wave processes and stream processes are accompanied by local deformations of a network.

In a primary substratum movement has a diffusion character, since a network is macroisotropic. During self-development (deformation) the network is capable to form zones with non-uniform phylaments density. Nonlinearity of environment increases. Streams of movement become more structured. The complex substratum on a structure cannot be uniform on a movement. Its each fragment has its own kinetics. Separate phylament can make high-frequency fluctuations, and the macrosubstratum thus only slowly pulses (is stretched - compressed). Macromovements of a substratum are low-frequency. It can be periodic processes of expansion, compression, re-structuring. The stretching cannot be infinite, therefore it should be replaced by compression. Macromovements are locomotives of

global evolutionary processes. Micromovements are energy sources for the material world. Movement creates the material world.

On fig. 4.3.1. the model of occurrence of some material particle is resulted. The ball of "coiling" phylaments forms a material particle. Stretched phylaments form channels of communications (space between particles - balls). Moving of a ball on a network occurs without its breaks, as a wave package, as a longitudinal wave of compression on a metal core, as a running wave on a scourge, as soliton (fig. 4.3.1. C. D.). The idea of such movement belongs to Demyanov D.D.

Phylaments have no weight and a charge. The weight and a charge are value judgment of macroscopical displays of cyclic forms of a substratum movement. As analogue whirlwinds on water can serve. The whirlwind is not separable from water, it is the form of a water movement. That the weight is a version of movement, is proved Einstein's by formula $mc^2 = E$. The specified equation expresses the law of transformation of one form of movement (weight) in another and is a special case of the law of energy conservation. One of the latent forms of movement (potential) is perceived by consciousness of the person as weight.

According to STO a weight can pass into energy that is the basis to consider a weight of one of unknown forms of movement. It is possible to assume, that the weight is a display of some forms of movement of balls of a network (attractors). The minimal moving "ball" shown as a weight, can be named graviton. Around of a clot deformations in a network which are estimated by devices as a floor extend. The gravitational attraction between gravitons is shown, as aspiration to lower energy (frequency) of fluctuation. Two separate gravitons make high-frequency fluctuations (high potential energy). At their rapproachement and merge joint frequency of fluctuations decreases, that lowers energy of complex object. Force of inertia arises as the effort spent for transfer of process of rotation from one site of a substratum to another.

The electric charge differs from the weight by other version of movement. Whirlwinds can cooperate with each other, that in macroscales is realized as the law of Universal gravitation and law of Kulon (interaction of charges). Macroscopical analogue of interactions of whirlwinds in liquids and gases can be an effect of Bernulli (two cylinders rotating in water, "are drawn" to each other). Sets of whirlwinds form units (substance, crystals). Moving of a set of whirlwinds is a moving of a substance. Circulation is very widespread in the material world. For example, a rotation of spiral galaxies, a circulation of planets, a rotation of the Earth, a circulation of a cloak of the Earth, atmospheric whirlwinds (cyclones), a twisting of molecules of fiber, a spiral of DNA, a bowl of molluscs, convection streams, electrons rotation, etc. Oscillatory chemical reactions also develop as spiral waves, auto wave processes in continuous environments are shown in the form of spiral waves [73]. It is possible to assume, as in a primary substratum, a basis of substance are vortical streams, and a basis of energy - fluctuations. So, the weight and the charge are macrodisplays of vortical movements in a substratum (hypothesis).

The model of a network substratum supplements representations about space. Despite of successes of a modern scientific idea, uniform understanding of space philosophy, the physicist till now have not reached. For today we have only different models of space.

Our model of a world substratum is closer to modern representations about space as it is not separable from a substance. The substance is forms of movement of the NETWORK. Movement is shown as local changes of topology of the NETWORK. Processes in the NETWORK are a basis for sensation of time. The human consciousness virtually reflects macroscopical units of balls of the NETWORK, experiencing these reflections in the form of macro spaces, and their changes - as time. The absolute space is an attribute of any "things". Each thing has the topology, therefore V.V.Vernadsky was right, including, that the alive substance has the "internal" space which is distinct from an environment (see chapter 1.7, 1.8).

The modern model of an extending Universe assumes «outflying» of galaxies, i.e. a process of their moving. But if galaxies "are sewn up" in a substratum, it should be deformed too. It is obvious, that expansion is accompanied by increase of heterogeneity of a substratum. The primary Universe represented the homogeneous, hydrogen environment. Evolution strengthened heterogeneity and today between dense stars and planets the physical vacuum reaches. Gravitation pulls together substance in clots, balls, but the space between clots is stretched (a beads, are precise). It is necessary to note, that training courses of natural sciences continue to consider the Universe homogeneous [73].

In a substratum - the grid can be presented processes not connected with its expansion. The network, and processes in a network, also can extend not as from a dot source of heat the spherical thermal front extends. From a crystal germ the crystal phase can grow in a solution (shperolit), filling all accessible space. From the thrown stone on water the spherical wave of a condition runs. In a view of told, singularity it will be represented not as a superdense point, and as the NETWORK not deformed by evolutionary deformations - SPACE. It is possible to admit existence of the Universe in which the condition pulses, but not its sizes.

The network model of a substratum opens a way to an explanation of parapsychology effects (psychokines, telepathy, a levitation) because between any processes there can be a liaison channel (since there is a continuous environment, and there is no emptiness). As a psychokines analogue the following example can serve.

If in the continuous environment (water) to twirl a process (whirlwind), and near to the first whirlwind in the water to start the second between them there will be a force of an attraction (law of Bernulli). One process influences on another.

The consciousness also is a process in the continuous environment, grasping not only neurones (tops of an iceberg), but also involving all levels of a matter (atoms, nucleons, vacuum whirlwinds, torsion fields). This process is not local, and includes some vicinity, therefore can influence on a condition of the next processes (any thing is a process).

So, the offered model satisfies with all invariants, resolves all seeming contradictions, therefore can serve as a target for the analysis and criticism. The network substratum simultaneously is uniform, continuous, connected, but discrete, final and infinite, as a circle.

Conclusions.

1. Structures of the World at various hierarchical levels have invariants (see in the text).

2. Satisfactory model of a substratum are not "atoms", and a huge network of fractal phylaments trigonal symmetry. A primare element is not a microobject, and the NETWORK in size with the Universe, "web" of flexible phylaments, having neither the beginning, nor the end.

3. The World has arisen not from chaos. The empirical world order has arisen from the primary order (the unknown person to human consciousness). The order of a highest level arises from the order of the lowest level, and already we comprehend consciousness.

4. Movement on a network is carried out by bends of "a running wave» type phylaments. The network does not move, but processes in it do. The latent form of a movement (potential) is perceived by consciousness of a person as a weight or a charge. The weight and the charge are macrodisplays of vortical movements in a substratum (hypothesis).

5. Gravitational and electric forces are unknown kinds of interactions of vortical structures (similar to forces of Berenulli).

6. All opportunities are potentially curtailed in networks - a substratum for realization of evolution.

7. The Network model of a substratum possesses a heuristic potential.

4.4. Concepts of synergetic theory of systems (STS).

Integrity of the Universe means unity of all its parts. In the continuous environment the consciousness is capable to allocate zones, where concentration of any parameters above, than in the next zones. Such zones can be named objects and are described as systems. As analogy it is possible to demonstrate an image of a lacy cloth with "figures". "Figure" is an object on a lacy cloth which is contrasted from a background in any parameters, qualities. On one-colour cloth distinctive attributes of figures can be density of stacking of strings and their spatial orientation. Figures are integrated in a uniform cloth by means of communications (strings). The resulted analogy models outlook of GTS.

But the objective reality differs from a static picture variability. The consciousness of a person is capable on a background of information handicapes to notice not only static, but also dynamical laws. A known example is an ability of subconsciousness "to hear" a musical melody on a background of dynamical polyphony of an orchestra. Jazz improvisations try "to confuse" the listener by a variobility, but any miracle, trained "ear" hears the main melody. This "exercise" satisfies "spiritual" needs of the listener therefore gives pleasure.

If an observable object during evolutionary transformations remains recognized, as well as the melody it occurs because in it is kept some "main" function. Consciousness as a film, is capable to remember sequence of events. An evolutionary row (ER) is multivariate, subjective allocation of lines of development of some set of the elements located in various parts of space. ER simultaneously exists in the past, the present and the future.

If to finish shooting a film about a developing flower it is possible to consider this film by analogue evolutionary of some (ER) of a flower. Development opens a lot of the new information which cannot be learned at studying an adult plant. Film can be scrolled" with different speed (a magnifier of time), opening a lot of the new information. It is possible to compare life cycles of the butterfly of a something ephemeral and the elephant, leading to their one time scale.

In chapter 1.7 it is shown, that ability (owing to memory) to model ER "sensation" of a course of time (temporality), moving to space is based on the same bases. **So, logic, system and a temporal sight are subconscious mechanisms of the World knowledge.**

It is necessary to note, that for a long time Buddhists for has an idea about coexistence of the past and the future during each instant, during each moment of time. At each moment of Buddhist conscious all his time number with the present, the past and future [101] is present. In GTS the past is present at the latent kind, as memory. But STS develops events on an axis of time. Altshuller [12] recommends this heuristic reception to inventors for generation of superoptimum decisions.

Representations about functional numbers can be seen in S.Mejen's works [143]. Set organs of the same destination (fins, flippers, paws, wings, legs, hands) he has united by the concept «meron». Evolution is carried out by a reshuffle of merons. In processes of convergence and divergence of merons various organisms (spineless, fishes, reptiles, etc.) were formed.

Unlike meron, ER is not easy a complete set of the same organs, but an evolutionary development of some function, for example, an evolutionary number of finitenesses, an evolutionary number of system of breath and so forth. Besides a concept an evolutionary number is used not only to alive, but to all without exception systems. The modern outlook is compelled to trace development of evolutionary numbers to have an opportunity to predict the future (advancing reflection). Mental integration of the past, the present and the future is necessary for this purpose into an evolutionary number (ER). An evolutionary number is modelled by consciousness. Its physical allocation from an objective reality is impossible, the same as jets of water in a stream are not separable. The same situation has developed in GTS where elements of a system allocate according to subjective representations.

STS allows to see the World "volumetric", opening its new sides. As an example we shall compare the points of view of two-dimensional and three-dimensional essence [215]. The "flat", bidimentional essence can read only one page of the book to get on other page it is required to leave in the third measurement. But even reading of flat page assumes scanning the text, i.e. movement on an axis of time, on the certain algorithm. Classical GTS is "flat", developed the synergetic theory of systems (STS) conducts to four-dimensional, temporal perception of systems and elements.



Fig.4.4.1. Geometrical analogues of evolutionary numbers

Let's assume some bidimentional essence "lives" on a flat circle. Movement of a flat circle on a perpendicular axis forms the threedimensional cylinder (fig. 4.4.1 A). If during movement of a circle the radius instead of the cylinder the cone (rice 4.4.1 B) will turn out in regular intervals increases. If the circle moves on a circle it is formed a tor (a bagel). Rotation of a circle around of the diameter forms a sphere. However the cross-section of these figures always forms a circle. For a bidimentional essence of volumetric figures does not exist. In the bidimentional world there is no cylinder, a cone, a tor, and there are only circles of different radius.

The general theory of systems describes the three-dimensional world. For expansion of its outlook it is necessary to add it with the fourth measurement (an axis of time). The synergetrics investigates processes of change on an axis of time. Therefore four-dimensional GTS we shall name «Synergetic theory of systems » (STS).

It is important to emphasize, that for GTS, a system is a cone, and for STS a system is an evolutionary number of development of a cone ("film", ontogenese, the biography, filogenese).

Studying of an organization condition outside time does not allow to understand its many properties. For example, properties of steel, is impossible to reproduce a taste of a pie only on the basis of a structure knowledge. It is important to know sequence and conditions of a composition preparation. Soot and diamond consist of carbon atoms but how to transform soot nto diamond? It is possible to ascertain simply the facts of "pasting" of subjects, but knowledge technologists and algorithm of pasting to allow to reach stronger connection (ingression by Bogdanov [30]).

An evolutionary number also as a system and its elements is a product of consciousness activity. Presence of an observer imposes additional restrictions connected with intervals of supervision. Supervision over the person of advanced age will not give an opportunity to present his infantile image. Millions years ago nobody observed a picture of biosphere evolution, but on the kept fossils of scientists partially could reconstruct it. For example, a dotted part of a cone (4.4.1) by the moment of supervision could finish already the existence, but it is possible to model it mentally. Every actual ER has real borders in space and time, but the consciousness can create its virtual continuation in the past and the future.

Time interval of ERs depends on a rate of "extinction" old and a rate of formation new. For example, numerous first essences of the Earth – procariots have degenerated in small colonies today. Global expansion of reptiles there were diing out turtles, snakes, crocodiles, lizards, etc. Neanderthal men have died out completely (was held in remembrance in fossils and wall painting), but people have bred. During evolution of the Universe with downturn of temperature of the interstellar environment "thermophilic" molecules disappeared. The quarks which have generated nucleons, have already disappeared, and physicists do not manage to find out them in a free condition. Primary protons (antiprotons) and neutrons (antineutrons) anniguilated with formation of photons. There was a small amount of the nucleons, was a building material for our world.

So, the past tends to disappear, break up, being kept only in a substratum "memory". Therefore ER reminds a trace of jet self-summer in the sky. The forward front moves and grows, back - is reduced. "Old" structures the ERs are a subject to disintegration, destruction. If the structure continues to exist presently, hence, it still young. Atoms exist many billions years, obviously, their life cycle is very long.

However disintegration of structures does not mean, that memory (information) of it disappears. Each new object can arise by a new combination of predecessors, i.e. "old" enters into structure "new". It is obvious, that the analysis of structure new can give data on the past. As examples historical researches, studying of archives, excavation of burial places and ancient settlements can serve. The device ancient monocelled can be understood on research of modern cells. DNA of the person stores memory of the died out organisms [136, 137]. Studying of cells has allowed to come out with the assumption, about before celled forms of a life. The detective on traces opens the last crimes. Annual rings on tree-stumps can tell about a climate of the last centuries. So, an evolutionary number can be prolonged in «depth of centuries» for a necessary interval.

However an evolutionary number cannot have infinite extent because to all there is a beginning and the end. Among alive essences are observed persystents (stopped development) which exist without appreciable evolution of hundred millions years. This "degeneration" evolutionary of some. As those consider, for example, sharks and scorpions. Among people it is possible to name persystents natives of Australia, the American Indians. Among sciences astrology, chiromancy, alchemy are persystants. But anything constant does not happen, «persystants» also finish life cycle. The sharks, existed hundred millions years, in 20 century are exposed to destruction from the person. Besides "fallen asleep" ER influences a condition of neighbours, is a part of biotzenoses, i.e. participates in processes of integration. We shall lead comparison of GTS and STS concepts.

1. In STS instead of a concept the element is entered a concept an elementary evolutionary row (ER). It can be presented metaphorically a film which can be scrolled" in consciousness. To perceive system in the form of set connected ERs, training spatially - time imagination is required. Completeness of representation the ER in consciousness depends on erudition and scientific knowledge. Identification the ER is made on its functions, instead of structure. ER development can be carried out due to internal reorganization and assimilation of the next structures at preservation of the main function.

2. At the system analysis of unknown object on the basis of GTS it happens difficultly to understand the purpose of functioning because the purpose is in the future. The image of a system in STS develops simultaneously of the present, the past and the future, therefore the system and the purpose are naturally combined. The past is stored in a memory (ch. 3.4) of material structures (geological "annals", DNA, a brain, technogenic data carriers, etc.). In this connection absent parts of the EN can be added by consciousness.

In figures 4.4.1 A and B distinction between GTS and StS elements - evolutionary rows (ER) is shown.

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Fig. 4.4.1. Schemes of elements interaction E1 and E2 in GTS and evolutionary numbers and (ER1, ER2) in STS.

In GTS communications are distributed in space between elements. But in STS communications exist both in space, and in time (communication of times). It considerably changes representation about interactions. Interactions can be present and last. The last interactions can define a condition of the present. Biological evolution is a circuit of consecutive events. Chain processes also well-known in chemistry and physics. We shall result examples of temporal influence communications on development of natural objects.

At explosion of pomegranates splinters scatter together, practically not influencing on each other. If to consider splinters during some moment after explosion from the point of OTO view it is impossible to name them a system since they do not cooperate among themselves, but the overall aim is available for them (to cover some space). If to finish shooting a film about explosion it is possible to see the reason of coherent flight of splinters. A range, a direction of splinters scattering are structurally programmed in the device pomegranates. Starting interaction which existed before explosion, virtually continued to function and after it. Explosion pomegranates represents its ontogenese. Similarly order of the commander is the program of action of the fighter on all extent of fight. We shall consider other examples. Growth of a crystal begins from a germ. The sizes of a germ are commensurable with a length of internuclear communications. At this stage there is no contradiction between integrity of system and length of communications. Further the crystal grows layers. One layer (substratum) defines a structure of following stratification. Precisely so the pallet for storage and transportations of eggs has cells (deepening) which determine an arrangement of eggs. The information of a primary substratum is transferred from a layer to a layer. The stream of the information from the center of growth to border of a growing crystal takes place. The described process allows to arise a system of a very big size, but thus the direct communication between the remote elements practically is lost, however there is a memory of the last communications. Memory contains system made virtual communications.

One-egged twins have identical programs of development (DNA) in the basis. Interaction between them in an adult condition can be minimized, but the starting genetic program to death will influence similarity of behaviour.

As an illustration of cognitive opportunities STS we shall try to resolve the contradiction between philosophical and cybernetic treatment of a concept "system" (look chapter 4.1). The model of an extending Universe assumes an initial condition when the sizes of the Universe have been limited, and in it the program of its further development (we shall recollect apeiron) contained. Interactions between subsystems of the Universe in a process of its expansion weaken, but it is enough starting program, that relay a race of the development proceeded.

What will happen with the Universe after exhaustion of starting potential, we do not know. It is possible to consider the Universe system because the starting algorithm and this virtual communication continue "to remember" its parts continues to operate the development.

3. GTS divides objects into elements capable to function for achievement of an overall aim. Sinergetic outlook divides the cognizable World on temporal elements (ERs) which "grow", branch, weaved into new combinations.

Integration of several ERs means, that the consciousness ceases to perceive them as functional separateness, and marks occurrence of a new quality. Two drops of water at merge form one large drop. Two slices of plasticine of different color at hashing form a new multi-colour figure. Unicells, having united, have formed a new quality - an organism. Many ancient organisms have died out, but the information about them has remained in a person genom [133].

On fig. 4.4.2 C the scheme of ERs differentiation is resulted. As an analogue a branching of a tree can serve. Each branch occurs in a point of bifrucation and "carries away" a part of SEI of the basic trunk, therefore a branch has a genetic similarity to a parent basis. A branch can independently develop, if it gets independent sources of resources. The parent basis can grow old and collapse, but in a genetic memory of a mutant (branch) the information on it is kept. We shall result examples.

Chromosomal systems of cells during evolution constantly became complicated. Metaphytes "were completed" with several types of cells, but the person contains 200 types of cells, hence, there was a branching the ERs of cells. In chapter 5 the integration and the differentiation of ERs will be considered more in detail.

Conclusions.

1. A synergetic approach to the theory of systems leads to the necessity of the concept "element" to add with concepts «an evolutionary row» (ER) and a nastzent element.

2. An evolutionary row is multivariate, subjective allocation of lines of development of some set of the functioning elements located in various parts of space. ER simultaneously exists in the past, the present and the future.

3. Not all of the ERs are in hierarchical correlations. There are also anarchical alliances. In the Universe the maximum hierarchy is the world substratum .

4. The Universe develops as a bouquet of various ERs. A development of any ER is periodically accompanied by its branching, splitting, bifrucations.

5. Convergence (integration) and divergence (bifrucation) of evolutionary rows takes place.

6. System communications are distributed in space and time. Communication of times can be not only starting, but also finishing. The locomotive of a chain events can be not an initial impulse, and last in this circuit.

7. Logic, system and a temporal sight are mechanisms of knowledge of the World, "sewn up" in subconsciousness.

4.5. Invariants of alive organization (IAO).

For tracking invariants of alive substance development it is necessary to find ER, whicn is found out in all forms of alive substance. On fig. 4.5.1. IAO scheme for an archaic human society and all its animal ancestors is resulted.



Fig. 4.5.1. An invariant cell of the alive organization (IAO).

IAO is self-sufficient, exception of any part will break its functioning. The prototype for IAO the cybernetic contour of coordination (fig.3.2.1) has served.

IAO of a society contains a contour «C-MP-B- MC», represented by fat arrows where the block **C** is some collective operating the whole cell. For a human society the individual is not **C**. An individual minimal block of existence is an anomaly since a person is born in a family and continues to

live in an environment of people, therefore the block **C** represents a collective. The human collective is known in the form of a family, a sort, a tribe, an association of tribes, a state, a firm, etc. During evolution a variety and quantity of collectives grows. Usually in the chapter of all human collectives there is a leader - the managing director. Final administrative decisions (technical, political, economic, social, etc.) are accepted by the leader, but can prepare collective [48]. In the environment of alive systems the block **C** can be presented by the leader of a flight, a brain, a nerve ganglion, a kernel of a cell

MP and MC are executive subsystems. The block MP represents means (including technical) influences on a biogeolocus; the block MP can include claws, teeth, a plough, a digging machine or the whole motor-vehicle park. At people workers enter into the block MP (slaves, serf, farmers, workers, soldiers) and operated means. At animals a role of the block MP organsd of a body (teeth, claws, paws and so forth) carry out. In a cell "tools" are the albuminous molecules synthesized by ribosomes.

Block MC is means of a product processing of a biolocus for internal and system consumption. Block MC can be claws, teeth, a pot for cooking porridge, a factory for chips manufacture, and an agricultural machine. At people persons (slaves, serf and other workers) necessarily enter into block MC. In the elementary IAO blocks MP and MC can be yet differentiated and executors are the same people. For example, at gathering fruits and roots moving on territories and gathering fruits are functions of MP block, and preliminary processing, clearing and eating of products are functions of the block of MC. Specialized means of work and processing of food are human attributes. At the bottom of biological levels a role of MP and MC parts of animals body (claws, paws, beaks, teeth, etc.) executed. A prickle in a beak of a bird, a stick in paws of a monkey show the first facts of branch of the block MP from an organism, the beginning of a technosphere origin.

B - biogeolocus, a fragment of biogeosphere, a source of mineral and organic raw material, an object of coordination, an object of work. The biogeolocus with biosphere communicates by trophic circuits. Biogeolocs can exist without a person, but a person cannot does without them. IAO can maintain any quantity of biolocs (hunting, fishing, agriculture, extraction of mineral raw material, etc.). For IAO all environment is a source of resources. IAO can maintain not only a biogeolocus, but also next IAO. Military attacks, capture of slaves are for use in blocks MP and MC, capture of property and resources - all this also activity of blocks MP and MC. For

modern IAO similar activity is operation of colonies, economic expansion, military aggression.

IAO are connected by set of channels with the environment (other IAO). Surpluses of a product through economic system are addressed to another IAO. Knowledge, information, experience are distributed between elements of a society through an educational and information system. Communications and mutual relations between various collectives form culture and a policy. IAO of mankind exchange among themselves genetic (duplication) and the social information (loan of experience).

The primitive human collective, using the block MP (hands, sticks, stones, bones of animals), influenced a biolocus (collecting, hunting, fishing, etc.). Products of a biolocus were used in food preliminary processed by block MC (fried, cooked, pounded, splitted up and so forth). The exhaustion of a biolocus led to a transition to other technologies of its operation (agriculture, callle-breading). Blocks Mp and MC (a plough, a tractor, etc.) were accordingly improved. The hand of a person did not dig the ground any more, and operated technical means. In the long term it is possible to present blocks MP and MC without people (robots, intellectual systems). We shall analyze in detail IAO of mankind in chapter 6.

IAO of monkeys. By means of forward finitenesses and teeth fruits, roots and meat of small animals are extracted. There is a struggle for the territory (biolocus). Technical means - a primitive stick. Blocks MP and MC are not differentiated (finitenesses and a teeth). Some kinds of monkeys have learned to wash roots, to remove a peel from a banana and an orange, to carry out an exchange of products inside of a pack [69]. With the next packs there can be an exchange of the genetic information.

IAO of predators (for example, lions pride) supervise their territory (biolocus B). The resource is extracted by means of the MP block, attributive tools (claws, canines). Before the use meat is distributed among pride members under the law of hierarchies (MC block). There is a contour of self-organizing (straight lines and feedback), adjusting a parity of a system number «a predator - a victim». The remained part of extraction is got to other inhabitants of savanna (an exchange of substance, economy). There is an exchange of the genetic information between a population of lions, (females can pass into another pride), and an exchange of experience (social genes).

IAO cells consists of the subsystems set incorporated by communications. Between parts of a cell there is an exchange of molecular

streams and electromagnetic waves [292]. In a cell there is a control centre **C** (DNA, a kernel) where genetic memory of the last experience and programs of the future development is stored. A source of life-support of DNA is cytoplasm (analogue of a biolocus). Cytoplasm through a membrane of a cell is connected with an intercellular liquid, a source of resources (analogue of biosphere). SEI streams are filtered through a membrane. On membranes there are identification receptors. Necessary - pass, ather and hostile detain or destroy. Metabolits are thrown out in a system of intercellular communications (analogue of an economic system, information interchange). Cells can exchange genes (trunsduction, sexduction) [203] including by means of viruses. All actions of life-support of a cell carry out fibers (MP and MC). As we see, the more alive creatures are primitive, the less blocks C, MP, B, MC are differentiated

It is possible to emphasize the following distinctions IAO of mankind and a unicell organism:

1. New variants of existence at bacteria are deposited with DNA. At the person internal deposition also takes place (in DNA, in a brain memory). But, besides there were artificial storehouses of the information outside of an organism (a book, magnetic tapes, disks, computers, knowledge of society).

2. For creation of the necessary technology in bacteria change of many generations of mutants, though it and occurs quickly enough is required. The necessary technology is a casual or directed search of variants. At the person some technologies are created also during many generations, but the accelerated decisions - during one life take place. Such "fast, virtual " decisions can be named creativity, inspiration. It is considered such processes to call a display of human reason.

Acceleration of creative processes of a person is defined by opportunities to operate with the functional information, to manipulate not realities (as a bacterium), and «vertuality» (models) by means of a brain. This evolutionary achievement. Such way can be seen and in the higher animals [69].

Speed of a human adaptations is defined by that human technologies mainly change an inhabitancy, and it does not demand change of many generations of executors. Bacteria can change only themselves, and these changes demand a destruction of one and occurrence of the other organisms, i.e. an alternation of generations. However an influence on the environment can be found out and in bacteria. This process was discovered yet by V.I.Vernadsky who paid attention on the fact of active influence of alive substance on transformations inert and all surface of the Earth. The elementary organisms have concentrated deposits of mineral raw material. Adjournment of sea organisms have formed limestone, a marble [46].

Conclusions.

1. From the position of STS a life can be considered as IAO functioning (invariant of alive organizations).

2. Evolution of an alive substance can be considered as an evolutionary IAO row.

3. Evolution is directed on differentiation of IAO parts.

4. The technosphere has appeared in a consequence of MP and MC blocks in IAO differentiation.

5.0. Invariants of the nonlinear world.

5.1. An integration of evolutionary rows

In chapter 4 invariant elements of the world organizations are revealed: evolutionary rows (ERs), invariants of the alive organization (IAO), threeunite of substance, energy and information (SEI). In the present chapter a research of universal mechanisms of evolutionary transformations proceeds. We shall show, that the unique mechanism of the innovations occurence is the combination of integration (I) and decompositions (D) of ERs (D - I technologies).



Fig. 5.1.1. D - I technologies of the world structures synthesis.

According to the paradigm of the global evolutionism the Universe is not static. The world substratum integrates elementary, indivisible philaments - "atoms" (chapter 4.3) which can not be divided (desintegrated) into parts, therefore any changes are possible only in a direction of their integration. **So, first steps of evolution began with integration of unknown persons to a science of physical vacuum structures, and of a microcosm formation.** These processes are known owing to physics. On fig. 5.1.1 the scheme of self-organizing of the World is presented by D –I technologies. Primary units could remain constant, be integrated and (or) desintegrated. In structure of non-stationary system the invariance can not be long. Integration (merge, connection, aggregation) can create also unstable formations which will inevitably break up (desintegrate) to fragments. Fragments can repeat certificates of integration in new combinations until there will be some steady combination (structure).

The steady combination is formed, if there are negative, stabilizing feedback (a control system of homeostasis). Occurrence of positive feedbacks does not allow a system to be stabilized, process of growth, expansion sometimes with an aggravation [101] "is untwisted". Any intensive growth inevitably comes to the end with decomposition of a system and all repeats on the same algorithms.

The model (fig. 5.1.1) shows only a small part of the world space. Arrows in the different parties symbolize communications with other zones of space. Streams SEI "mix" structures and processes in an improbably complex picture. Galaxies, star systems, fogs move. Obviously, "neighbours" cooperate first of all.

The Universe is weaved from an incalculable ERs set. Each object, each organization can be considered as ball of ERs, as a feature film simultaneously leading lines of a life of many heroes. For example, the car ER develops of all life lines of all existed models and marks. ER of mankind is a cumulative result of all people activity. ER of families is a family tree. ER of an organism "is weaved" from cells, fabrics, organs, finitenesses and the distributed systems (blood system, nervous, etc.) ERs. A brain of the person are billions of neurons, each of which has 10 thousand connections not only with nearby ones. If ERs are far carried in space and in time they can not cooperate. For example, occurrence of a life on the Earth while does not influence in any way occurrence of a life on other planets. Very complex reality to present by one model is impossible. Therefore we shall consider one more generalization (fig. 5.1.2).



Fibres

Fig. 5.1.2. Model of an evolutionary row "weaving".

The world substratum by analogy can be presented as a ball of woolen fibres (see 5.1.2). From woolen fibres it is possible to make a string. From strings to spin cords. From cords - ropes. Weaving symbolizes interaction (integration) of ERs. In everyone next stratum there are new horizontal (cross-section) communications, therefore a cord gets emergent properties. The cord is an anarchical organization since all strings are equal in rights. However the cord can be weaved from strings not equivalent on properties (for example, flax with lavsan), then in every stratum dominants (the hierarch, lavsan), organizing a system of properties will appear. Among people, for example, there are the prepotent imperial dynasties rendering the strongest influence.

If imagine, that cords not only are braided (integration), but sometimes and branch (untwine partially, made multiple copies), the picture becomes more approached to a reality. Branched off ERs inevitably enter into alliances with others ERs.It is possible to weave «macrome» - a large-scale analogue of a lace from cords. Cloths of «macrome» can be united into multivariate compositions.

On the scheme 5.1.3 the illustration of the stated theoretical reasons is carried out and a "bouquet" of the basic evolutionary rows is shown.




Basic evolutionary row ER1 (the most part of the Universe weight) is presented by a sequence: quarks - nucleons - hydrogen plasma - stars of the first generation [238]. Integration of quarks has created nucleons. Sets of nucleons have formed a nuclear plasma. Stars were formed of huge congestions of kernels of hydrogen and helium. Probably, that free quarks any more does not remain (were a part of nucleons). Nucleons, plasma and stars continue evolution. Photons and neutrino do not change. In bowels of stars synthesis of heavy elements (nucleosynthesis) proceeds.

When ER expands till the extreme sizes it loses stability and breaks up on elements (decomposition), therefore some especially large stars have blown up (decomposition of ERs), disseminating atoms in space. Not blown up stars continued a former way of the development.

After disintegration of primary ERs, opportunities of evolution have extended. The further evolution could use processes not only of integration, **but** also decomposition of substance, energy, information (SEI). The subsequent integration of atoms has led to formation of molecules and an interstellar dust. The secondary stars and planets formed of .

On a surface of some planets (for example, the Earth) integration (merge, a convergence, a combination) of some polymeric molecules has led to occurrence of alive substance. Rather recently there was a technogenic world as a result of convergence of reasonable and inert substance.

The analysis of the scheme 5.1.3. denies the standard error, that the albuminous life and the person are the top floors of hierarchy of the World. Level ER4 (a life, the person) on fig. 5.1.3. can not apply for the maximum since fibers have an insignificant share of space of the Universe and use an insignificant share of a matter. Alive substances (mould) on a roof of a skyscraper nobody begins to build in a small lump hierarchy of the house. The life does not include all world structures (even a star, a galaxy, a planet) and does not influence their condition, therefore by definition can not be the maximum hierarch, i.e. an operating subsystem. The maximum hierarch is the world substratum because «the wind of evolution» blows from it, and algorithms operating development are incorporated in it.

The quantity of a matter in the isolated Universe should be constant. If from this matter new construction the weight of new growths can not exceed initial weight of the Universe is conducted. The weight of a terrestrial biosphere and a technosphere can not exceed a weight of the Earth (or weights of an earth's crust). Every bifrucation alienates only a part of a parent structure weight. For this reason young ERs (fig. 5.1.3) contain less substance and energy. "Base" (ER1) is the most massive both power-intensive and less various. In comparison with it the albuminous life (ER3) essentially is more various, but is insignificant by weight.

In Vernadsky opinion the biomass on the Earth always was approximately constant. Occurrence of new kinds of alive essences occured due to "swapping" a biomass from other subsystems. The weight of a primary alive substratum was distributed in biosphere on trophic circuits, therefore the weight of animals is less than the weight of plants, and the weight of predators concerns to the weight of their victims as 1/10 [183].

Evolution of a substance (fig. 5.1.3) should include also evolution of energy and information since they are triunite (SEI). Expansion of the Universe is accompanied by a movement of a substratum substance (ch. 4.3). Macroscopical forms of movement grow out an interference of a substratum movements.

The substance of the world exists owing to cogerentness of evolution cogerentness parts movements. During substratum strengthening of various movement forms is observed. Energy of a person represents in the special image the coordinated movement of atoms, molecules, photons, electrons and so forth. Movement of planets around of the Sun grows out cooperative movement of a space dust of which they were formed. The directed movement of the piston of the thermal engine is born from a chaotic movement of molecules of gas in a cylindrical vessel. With increase of a substance packing density the randomness of movement decreases in sequence: a gas, a liquid, a firm body. Movement of cells in a colony of microorganisms is more stochastic, than in a structure of an organism. Movement of fish dense flight surprisingly synchronously.

Pressure of gas molecules upon walls of a vessel is a consequence of an interference of stochastic movements, and uncogeretness creates fluctuations.

However a stochastic component of coherent movements is a Under "catalyst" of evolution. influence of fluctuations one communications constantly collapse, and new ons arise, that enables a system smoothly to be reconstructed. For example, the subject on an inclined plane is kept from sliding by conservative force of friction. Force of gravitation aspires to change a situation. Vibration of a plane will lead to sliding of a subject downwards since vibration destroys communications of a subject with a support, reducing force of friction. Similarly fluctuations are the catalyst (accelerator) of variability.

However vibrations (cyclic processes) can sometimes stabilize a condition of the organization. In the vibrating mechanics [103] the problem with a return pendulum (a pencil put on an edge) which does not fall if vibration of a support is carried out is known.

Fluctuations (deviations) are the integral element of homeocinesis. It is known, that any coordination is impossible without deviations. Reaction of operated system to deviations is a basis of homeostation and homeocinesis. The new scientific direction which by analogy can be named «Fluctuation mechanics of evolution systems» is planned.

Continuing SEI research of evolution, it is necessary to track also evolution of information (I). In chapter 1.8 heterogeneities of a substratum are identified with an attributive information. SEI integration and differentiation is accompanied by a character change of a substratum unhomogeneus. The size of a substratum heterogenity is unknown, but it is obvious less than sizes since electrone is a unit of a substratum substance. The size electrone is unknown till nowadays.

Evolution of attributive information occurs in a direction of heterogenities integration. The quantity of small heterogeneities decreases, and the quantity of large ones increases. In aggregate the total heterogeneities decreases, since for formation of one large structure is required some small ones.

Heterogeneities (attributive information) can be transferred by streams of substance on any distances. Transferable by means of SEI streams information is called operative information [1]. As examples photo, broadcast, telegraph, phone can serve. The sound from air can be transferred to other carrier (water) or a firm body. Light carriers some information about far galaxies, stars, a chemical compound of the space even in the ebsence of an observer. Rocks store the information on a direction of magnetic power lines of an ancient magnetic field of the Earth. The relief of a surface of Mars stores the information on former times when the rivers flew, and there was a dense atmosphere. The example of carring information from the center of crystallization to periphery of a growing crystal was resulted in chapter 3.4.

It is possible to consider the genetic information the operative one. **A life is a form of the operative information existence.** We shall compare integration of the information into alive and lifeless systems.

Process of **lifeless structures** integration breaks up into three actual stages: a rapproachement, a reorganization, a synthesis of an integrated structure. As examples are merge of two little drops of water, chemical reactions of new connections formation, collision of asteroids with planets, collision of galaxies and so forth. Not any collision leads to a synthesis of an integrated structure, sometimes only a change of an initial structure (for example, accident) which begins a new existence (processes on a dump) occurs.

Integration of evolutionary rows of **alive substance** occurs under other scheme. "Mechanical" collision of organisms does not lead to a synthesis of a new ER. Synthesis of an organism in the beginning occurs virtually (merge of genes), arises "plan" of the future organism. Under this plan in bowels of an "old" organism a new soma is synthesized. A soma is means for preservation and transfer of the genetic information. Life cycle of a soma is short, but ER of genetic information in DNA exists hundred millions years. A body is replaceable "clothes" for the genetic information. Development of genom is carried out by means of integration of genes of parents (at sexual duplication) and genes recombination in own chromosomes (chapter 3.1).

In chapter 3.4 it is shown, that the role of coordination during evolution constantly increases. A coordination is impossible without circulation of the operative information, hence, ER of an operative information constantly develops. So, during evolution the role of the operative information constantly increases, which with the advent of a reason was added with the "functional" information (reflected in structures of a brain) [1].

So, SEI evolution has a trend to aggregation (integration). Decomposition finishes the ER growth, and prepares a material for new integrations.

Conclusions.

1. D - I technologies are invariant for all without exception to stages of the Universe "life".

2. Integration in units is carried out on all making SEI (substance, energy, information).

3. Each class of new growths less capacious on energy and weight, than previous. For formation new ones, more complex organizations less energy is required, than for previous.

4. Insufficient integration of different forms of movement into units of substance is shown in the form of fluctuations. The new scientific direction which by analogy to «vibrating mechanic » can be named «fluctuation mechanics of evolution systems » is planned.

5. ER integration is a mechanism of occurrence of "new" and curtailing of a variety of "old".

6. Association, aggregation, integration are mechanisms of occurrence of new structures, due to reduction of former (curtailing of a variety).

7. Evolution leads to integration of variety, the variety scale increases, the role of the operative information constantly increases.

8. The conventional error is the opinion, that the albuminous life and the person are the top floors of hierarchical structures of the World.

5.2. A branching (decomposition) of evolutionary rows.

It has shown above, that the first innovations occured by an integration of a substratum structures. In the subsequent innovations it became possible both integration, and decomposition. The aspiration to the branched out processes reflects the fundamental, nonlinear characteristic of a substratum - its mesh (branched out) structure (see chapter 4). For example, the cell breaks up to molecules. The state as a result of separatism breaks up to parts. Disintegration more often occurs at ageing (stagnation) of ERa. Fragments enter new alliances after disintegration. The separated branch will have chances of independent existence if it borrows resources from a parent substratum. In new growths of resources always are less, than in the parent substratum, therefore the separated branch should find new communications (new integration) which can become a new source of resources for it. An evolutionary row developing with an advancing one will inevitably break up, since breaks harmony, the law of proportionality (A.Bogdanov) with associates ERs.

The third process is not accompanied by disintegration of a system, but thus communications with an environment change. However this variant is strongly approached to integration. Integration with some objects (processes) is broken and there is an integration with others. Such way of integration can be named a recombination, a combination theory (see 5.3).

During ER development there are branchings and with "age" the quantity of affiliated ERs increases. The ER is "younger", the less it is branching. Branches can gradually lose touch with parent ER and associate with others ERs (integration). The most known example is phylogenetic "tree" of a life evolution.

The first metaphytes resulted from an integration of only several types of cells. In 600 million years of evolution in a person organism it is totaled already about 200 types of specialized cells [84]. Hence, during evolution there was a branching lines of cells development. It is necessary to pay attention to the fact of existence in a human body of trunk cells – universals. They can be transformed to any fabric (a liver, muscles, etc.). It means, that they contain all necessary information, and under influence of the environment realize only necessary one. Probably, that trunk cells are the rests of universal cells which from a colonial way of life send to organism existence. Branchings in the information block of a cell are known. Now a basis of a kernel is DNA – the main "legislator", the keeper of all programs of a cell development . Executors of programs are PHK and fibers.

In precell organisms legislative functions were not divided from executive. The information block - ribozim was capable to execute functions of DNA, and of PHK [94, 95]. Then during evolution functions were split, bifrucation on DNA and PHK has occured. The quantity of PHK types PHK increased up to four, and DNA continues "to grow" in a former direction, keeping genetic memory of biosphere [247].

The set of the nuclear and chemical branched out processes are known, but in the present work we shall not consider them. It is more actually to investigate the branched out processes in a human society.

It is possible to track a historical number of a person specialities: the collector, the hunter, the cattleman, the farmer, the mason, the founder of copper, the goldsmith, the carpenter, the tanner, the weaver, the potter, the baker, the grain-grower, the gardener, the fisherman, the miner, the smith, the merchant, the dealer.

In Europe cities of the 13 century it was possible to find out shops of millers, bakers, butchers, fishmen, coal miners, glove-makers, rope-makers, shoemakers, tailors, smiths, clothiers, mechanics, jewellers, dealers, builders, etc. In Novgorod there were 237 professions. In 13-15 centuries in Paris- 448 professions, in Frankfurt - 191, in Basel - 120 [47] are known. New professional collectives appear during development of a technosphere, old ones disappear. It is possible to assume, that some equilibrium quantity of trades was established. The differentiation of social processes is considered in more details in chapter 6.

ERs branching is carried out at achievement of exclusive concentration of substance (S) and energy (E) in the necessary place and during necessary time. When in a system a lot of energy is saved it is enough the weak push that irreversible process has begun. Fluctuations can "provoke" a development of bifrucations.

Concentration of energy in some system can generate flowing of it in the surrounding material space. The part of diffusion energy can return on an input of a system and close a contour of a positive feedback that will cause a generation of process with an aggravation or "quieter" process. Occurrence of positive feedback is considered in chapter 4.2. Explosion of some stars has started process of synthesis of molecules and substances from atoms, but stars, but only some, exceeding critical weight blow up not all. Similarly in structure of alive are included not all 10 million types of molecules, but mainly containing carbon. Not all types monocelled have formed metaphytes, the majority remains at a level of colonies. Not all kinds of primates have developed in the person and not all ancient people have formed a basis of a civilization. Not all types of civilizations have generated capitalism (only Europe). Only in Russia there was a state of a communistic orientation. Whether there are laws of occurrence of concentration (mutation) or stochastism works, it is necessary to find out yet.

In sinergetics works too the great value is given to bifurcations processes, as to mechanisms of self-organizing. In chapter 5.1 it is shown, that innovations occur as a result of integration, instead of decomposition (bifrucation) is more often. In chapter 2.0 a question on bifurcation limitation of a type « OR - OR » and greater prevalence polifrucation « And - And » is mentioned. It is shown, that bifrucation mechanism contradicts to evolutionism. At its strict execution a variety degenerates. We shall continue the critical bifurcations analysis.

For occurrence of an evolutionary variety polifrucations are necessary. Branches and roots of trees aspire to block as much as possible a field from which resources are consumed. Branchings do not exclude each other as in mechanical systems, and supplement each other, creating a bouquet of consequences, carrying out a total choice of all possible variants. Polifrucations investigate ways of a system movement, and natural selection "cuts out" impractical branches. But from power restrictions it is possible to draw a conclusion, that the quantity of branchings in a polifrucation point can not be as great as possible.

It is possible to show, that even simple, lifeless systems can realize polifrucations, if there is an opportunity to share on parts at surplus of energy. If in a flank to pour water in which on height there are apertures, the water level will rise only up to the bottom aperture, since water will start to follow. This example often is resulted in biology for an illustration of a principle of minimum by Libich [183]. However, increasing speed of water delivery in a flank, it is possible, despite of a leaking, to lift a level up to the uppermost aperture. Instead of one jet ,many jets will follow (polifrucation).

An other example can be a channel of a stream. If the downpour increases inflow of water, the water level in a stream raises, the stream finds new channels, branches (polifrucation). This process can be irreversible. After a recession of water the stream can lay to itself a new channel.

During an ascention on an evolutionary ladder polifrucations become more "branchy". It is defined by growth of a systems variety and growth of opportunities of the introduction into new combinations. The simple system has some valencies. For example, chemical elements can enter interactions with the limited quantity of other elements. The more variously the object, the more valencies are in it. Biotzenos, consisting of hundred kinds of alive creatures, has an opportunity to cooperate with each of them. On fig. 5.2.1 the told is illustrated. Valency arises between "related" platforms.



Fig. 5.2.1. A – a monovalent object. B – a multivalent object.

Kurdyumov S.P. stating in the monography [101] a bifrucational mechanism of development, does a conclusion, «that there are evolutionary rules of an interdiction on formation of the maximum forms of a life. For example, horse run has some fixed ways: a gallop, a lynx, a pace». However the resulted examples do not cover all set of ways of movement on feet. In aggregate alive creatures realized all conceivable variants of movement (except of a wheel): running, jumping, crawling and so forth. There are known supervisions when the crippled dog went only on two forward feet.

The listed receptions of horses running [101] are the most rational therefore most known. But at sports running horses show essentially greater arsenal of movement receptions. So, for systems of the maximum

complexity potential polifrucation opportunities are huge, but many variants are limited by resource of opportunities.

Contrary to the conclusions made on the basis of simple, idealised models [101], elementary processes proceed very selectively (i.e. under the determined laws) only at a microlevel. For complex systems the way to the future is represented as a treelike, constantly branching network. This network of ways blocks the whole field of search (as the blood system of capillaries), therefore is available a potential opportunity to operate development of mankind. Those ways which mismatch fundamental laws of the nature and resource opportunities are forbidden only. But at a plenty of roundabout variants on top levels the mankind has a chance to find the optimum way of development.

So, conclusions of "mathematical" synergetrics cannot be widespread on any objects and are, most likely, special cases of "indivisible" objects movement. Mathematical researches of simple systems cannot arm mankind with reliable knowledge for forecasting development of more complex systems, but they possess heuristic potential. However the history repeats. Conclusions of mathematicians start to extrapolate "for the whole world".

In addition it is possible to add, that mechanisms of development of the supercomplex systems, being set very much many ERs, can also manage without bifrucations. The Earth was gradually formed from protoplanet clouds. The biosphere has already developed as a smooth process for 4 billion years, not being split in parts. Dinosaurs "died out" duaring millions years, being gradually replaced by mammals.

As an example, we shall imagine the large manufacture having hundreds of machine tools. In a process of deterioration machine tools are replaced by turns. Replacement of one machine tool practically does not change a character of the manufacture. But when 50 % of machine tools we shall see absolutely new even the manufacture will be replaced. Evolution of manufacture is a consequence of evolution of machine tools (bifrucation of manufacture is absent, but bifurcations of machine tools, replacement of system elements are present).

It is possible to finish with an example from micro world. In the closed vessel the trajectories of gas molecules movement make incalculable quantity of bifrucations, but pressure of gas remains stable.

Pertinently to notice, that a human consciousness, if it is necessary to find an optimum way of achievement of the purpose, builds a bouquet of ways to this purpose, and chooses an optimum variant [57]. The nature operated similarly. This concurrence once again emphasizes the presence of the rational "guidebooks" which have been "sewn up" in the subconsciousness (chapter 7).

Conclusions.

1. The aspiration to the branched out processes at all levels of the World reflects the mesh (branched out) structure of a substratum.

2. Conclusions of "mathematical" synergetrics cannot be widespread on any objects and are special cases of indivisible objects bifurcations under the scheme « or - or ». Laws of development of complex systems is possible to make only from research of complex systems.

3. Complex, systems usually make «polifrucations» under the scheme "and -and".

4. Polifrucation is a total choice of all possible variants of development including deadlock.

5. Polifrucation can occur during one moment (as fraction from a gun), and to be developed in time (shooting by bullets from the automatic device).

6. During an ascention on an evolutionary ladder polifrucations become more «branchy».

7. Separated at polifrucation a branch should borrow from parent ER necessary resources for independent existence. In parent ER there should be preconditions for bifrucation (concentration SEI).

8. Fluctuations can promote decomposition.

9. Supercomplex systems can do without bifrucations and without processes with an aggravation.

5.3. Combination theory - the main mechanism of evolution.

Evolution is carried out by alternation of integration - decompositions (D-) substances at domination of integration. Berg H.P. also defended the point of view, that convergence dominates above divergence. Tyukhin V.S. [208] considers divergence as a preparatory stage for the subsequent

synthesis. This set of processes can appropriate the term "combination theory".

Human imagination powerlessly thinks up the new process which is not existing in the nature (all opening are taken from the nature) [30], but thus, imitating the nature, it is possible to combine somehow known decisions to create chimeras, griffins, sphynxes. The composite materials which are not existing in the nature are created in a such way. The known historian of a science D.Danin has thought up even the name for this process centauristics [61]. So, the real nature and an artificial technosphere evolutionize, create a new organization by means of known combinations (available). We ascertain, that the evolutionary combination theory is an invariant for all systems without exception. We shall prove it by examples.

Units of a lifeless matter are formed by direct contacts of various "things". Unlike a lifeless matter "designing" of the new biological organizations it is carried out not at a level, and at a level of a combination of genes, at an information level. New fibers appear not at a combination of already available fibers, and "project" at a level of information system in DNA all over again is created, and their synthesis in ribosomes is then carried out. This one more difference alive from lifeless substance.

Within the limits of one population of animals genes are combined as a result of the sexual crossing, being the mechanism of a population genofund generalization. For occurrence of a new phenotype it is enough to create a new combination of prepotent genes.

Stability of an alive substance is based on huge variative opportunities catfishes which is defined by variability of genes. Therefore experience of all biosphere is stored in each cell, so it is a value of genetic information. However not all combinations of genes are viable. In order not to loose what has been got, there is "interdiction" on interspecific crossing, the mechanism of a reparation of casual mutations [127] works, recessive (unnecessary) genes are deposited.

But a recessive "gin" sometimes leaves a jug that it is possible to see on an example of a human embryo sequence development. First the germ is a cell, then multicellular, then a fish with gills, amphibious with membranes between fingers, a mammal with four pairs of, a primate with a tail and, at last, a person [139, 140.] The embrio development repeats fast the last stages of biosphere evolution. Existence at the person a genetic memory of the last biosphere conditions proves by congenital pathologies (woolliness, tailiness, etc.) A cancer cell is a consequence of the genes work peculiar to ancient plants and mushrooms [115], i.e. in genom a memory even about the elementary forms of a life is stored.

Thus, in biosphere there is such volume of the information, that is saved up, combining only existing genes (including recessive), theoretically it is possible to create any compositions of alive substance.

Now viruses can carry out blocks of the genetic information (epidemic) between different hierarchical levels of biosphere. The genic engineering only starts to master experience of biosphere transmission genes from a cell to a cell by means of viruses. It is possible to predict, that the science will find a way in the future to take «a recessive gin» from genom cells, creating new forms of a life.

Genetic memory inside of cells exists hundred millions years, and it cannot be casual.there should be all the same A mechanism of its "awakening" should be, in an other way its storage would be useless.

In the history of genetics there was not explained, an effect of occurrence of the hen with paws of a duck after an irradiation of the hen embryos by a biofield of a duck [«The Hairy chicken or the hen with membranes». Knowledge - Force. 1989, Nº 8]. Probably, it also was an initiated genes recombination of the hen genes.

In connection with the discussed combinational mechanism of evolution it is possible to make the following assumptions. The alive cells first on the Earth had a gene of small information capacity. Accumulation of the information in genom went slowly, casual image, through damages by radiation, temperature, chemical interactions. These processes are being proceed till now. Accumulation of a variety in genom has opened new opportunities for the accelerated variability, recombinations of the saved up information became possible, during which "experimental" organisms appeared. A selection left more adapted essences. Instict "projects" created opportunities for new combination theory.

The discussed hypothesis allows to explain, why other "new settlers" of the Earth, procariots, dominated over a planet during 1,5 billion years, very slowly changing, and the subsequent organizations accelerated their development. Evolution of a life went slowly because there was no bank of variants from which it was possible to choose elements for "designing" new biological systems. Increasing of a world structures variety quite explainably by increasing in number of combinations at increasing of

combined elements quantity. Not all combinations are steady and become base for new undertakings. What to be, and what to leave the natural selection solves. Ingenious Charles Darvin has guessed this gold rule of evolution, but it did not assume, that its formula (variability, a heredity, selection) is fair not only for evolution of alive essences, but it also covers the whole world.

The reasonable form of a life very widely use combination theory. Human "chimeras" - inventions at the beginning are carried out at an information level (virtual). Models are constructed in a brain at first, and only then are realized in "material". Scientific ideas are a result of human experience generalization and a new combination of the known facts. As an example the present monography can serve.

Creative activity of a person is much similar to algorithms of the nature self-organizing. All inventions are the technogenic chimeras, new combinations of known technical decisions [12]. Technical problems are solved due to a combination of relatives on functions, but various by a principle of systems actions [57]. For example, a hybrid of a plane and a rocket is a plane of the vertical rise and landing.

All inventions are based on ideas transofrmations. A new machine is instinctively thought in the form of additions to an "old" one. Old forms dominate over many machines. Manufacturer Lefer, starting manufacture of Lenuar engines, has given them such characteristic: «the machine uses a Strit piston, it of a double action, as in a Lebon machine. Ignition by a spark, as in a Riv machine. It borrows water cooling from Samuel Broun. It can work on the flying hydrocarbons offered by Erskin - Asard, but besides it involves gas and air by the action of a piston, without preliminary mixing». It is visible, that the internal combustion engine is a hybrid (a combination) from decisions of the inventors found by row of inventors. We considered examples of reasonable activity of a person, but similar processes in a human society proceed spontaneously.

Ethnoses spontaneously result from a combination of cultures and genotypes of people [59]. The culture of mankind, consists of separate ethnoses cultures, religions, customs, ceremonies, scientific knowledge, technical achievements, language structures. Modern cultures contain combinations of fragments of the broken cultures in the structure. Each culture represents a new combination known before elements plus and mutations. Identification of cultures, civilizations by any one prepotent attribute led to futile discussions. Toynbee's extensive works [205] on classification of types of civilizations are often criticized [85]. Each researcher offers their own point of view on classification of civilizations, but also it is also criticized. The mistake of all researchers consists that they search for a prepotent attribute of a culture, a civilization. But to estimate civilizations it is necessary on a combination (spectrum) of elements of cultures that represents serious methodical difficulties. In statistics a surplus information is simplifiesed by a method of identical parameters averaging. But how it is possible to average policy and music? In the theory of decision-making it is suggested to use methods of expert estimations, weight factors. However dissociation of sciences complicates use of methods of decision-making in researches of historians and sociologists.

We have considered integration and decomposition as "steps" of evolutionary process, but these steps happen directed in the different directions. Evolution of a type «a step back - two steps forward » occurs as disintegration of some structure on fragments (polifrucation) to the subsequent synthesis new. For example, after disintegration of Roman empire from fragments Byzantium, France, German states were formed. Fragments are material for evolution. They should reconstruct elements and communications, to join in a combination (unions) with other fragments. If they will manage to defend the independence on a card of a planet there will be new states.

But after polifrucation fragments can continue to break up, rolling down on the lowest hierarchical level. That there were the new more complex structures, arisen "fragments" should make association in something new. At decomposition the ERa the part of functions can be lost, for example, at parasites (gelmints). Such simplified systems are not capable to the independent existence, one should enter into an alliance with others. The parasite cannot exist without "owner", hence, the parasite not independent object, and is an element of a system «the parasite - the owner». Parasitism - the phenomenon similar to specialization of functions. The person also has lost many abilities, available at animals (the aggravated feelings). The person cannot exist without technics, therefore in section 3 we allocate system IAO a person is a part of which.

Conclusions.

1. Evolution is carried out as a combination of integration and decomposition mechanisms. The combination theory is an invariant for all without exception systems.

2. Unlike a lifeless matter "designing" of new biological organizations it is carried out not at a level of soma, but at a level of a genes combination.

3. Technogenic systems are primarily projected at a level of consciousness.

4. The combination of the "own", cellular genetic information can potentially create an infinite number of alive essences and be an invariant of the Universe development.

5. Originally evolution of a life went slowly since there was no bank of genes for combination theory.

6. It is possible to predict, that the science will find a way in the future to take «a recession gin» from a cell genom, creating the new combined forms of a life.

5.4. Dynamics of evolutionary processes.

Reseach in sections 5.1 - 5.3 has shown, that evolutionary processes are reduced to a combination, integration, decomposition, branching, acceleration, delay of development. However each process has duration. Any change is accompanied by "braking" and carried out through overcoming of obstacles. Processes have the limited speed. Reorganization of a system demands efforts and time. Braking is estimated by consciousness as "conservatism".

Conservatism is known in mechanic as the law of Newton inertia, in chemistry as Le-Shatelje principle, in physics - as Lentz law. According to the scheme of a world substratum (chapter 4.3) any macromovement is accompanied by a substratum filament movement, therefore the inertions reasons, conservatism are hidden in dynamics of a substratum. So, there is a general law of conservatism.

In representations of classical mechanics any object "aspires" to borrow steady position and as much as possible long (conservatively) in it to be, how a ball 1 on fig. 5.4.1 is.



Fig. 5.4.1

If the ball will make fluctuations in borders of a pole (the steadiest from the point of view of classical mechanics) it will slip the bottom position with the maximal speed and longer to be late in the top (unstable) positions. Therefore, as a system, it should adapt for the longest condition (nonequilibrium).

Evolution occurs contrary to inertness of systems. Variability at presence of conservative forces demands expenses of energy, fulfilment of work. The circus attraction «on a vertical wall» shows races steady «inbalance» while sufficient speed of a motorcycle is kept. The vertical pendulum "costs" while the support [102] vibrates. The gyroscope is steady, while the flywheel rotates. The sphere 2 at top can be kept from falling, serially pushing it in a direction of arrows (fig. 5.4.1). So, making operated work, it is possible to keep object in a condition of steady inbalace adaptive opportunities will not be settled yet.

Self-preservation of alive systems is special cases of a conservatism display. Homeostasis is also a display of conservatism, stabilization, self-preservation. People have a conservatism of thinking, customs, traditions. **The coordinative processes directed on stabilization of a complex systems condition, we shall refer to conservative processes.**

Gravitation in a view of this law looks as the force interfering the Universe expansion. Gravitation represents a special case of inertia (braking). Nobody studied gravitation in conditions of the stationary Universe, therefore gravitation can appear as an attribute only of an extending Universe. At compression of the Universe inertia will be shown as antigravitation (pushing away of weights). It is possible to assume, that the mesh substratum (chapter 4.3) possesses elasticity since elasticity is conservative reaction on attempt to change topology of an object.

The non-stationary world cannot be described in terms of «stability, homeostation». Instead of representations about homeostation it is better to use a concept «homeochines». Homeochines is a process of continuous reorganization of the organization with the purpose of preservation of the basic functions.

The continuity, dynamism of development puts a problem of a concept definition «an intermediate condition». In a continuous chain of events it is possible to consider any part intermediate. It is considered to be transitive forms unstable, impractical because they quickly disappear, not having left traces. What have left traces in adjournment of rocks are studied only. However value of intermediate forms in evolution can be the same, as at steps of a ladder between platforms. On a ladder it is important to rise and after that it can disappear. Without intermediate forms people would not appear.

The concept of unstationarity is shown in the form of life cycle (LC) of all organizations. Each structure makes LC: birth, development, destruction. The stage of the Universe expansion proceeding at the moment should come to the end and be replaced by a stage of "compression". The same destiny expects a galaxy, the Sun, the Earth, biosphere. Continents and oceans are born and die. All kinds of essences, ethnoses, states, nations, elements of culture, firms, goods, beliefs, customs, etc. pass their life cycle. The life of a complex organization develops of the set of life cycles of its elements.

Any evolutionary row (ER), arises in bowels of a parent substratum and this stage still is not appreciable for the observer. Every ER makes the LC. "Young" ER shows abilities to independent development, growth quantitative and qualitative is observed, the weight grows, the ecological niche extends, a variety of elements grows, communications with neighbours amplify. In a maturity there is a "rationalization", superfluous elements and communications are reduced, the maximum of efficiency is reached. The stage of stagnation, decline is accompanied by reduction of quantity, quality and a variety of elements.

In bowels of "dying" the ER a new mutation can arise. If it has not appeared, ER breaks up to fragments which are absorbed (are integrated) by viable neighbours. Full disappearance, possibly, never occurs. Fishes exist till now, a variety of reptiles has decreased, but snakes, turtles, crocodiles, etc. continue to exsist. Information about extinct kinds is kept in genes of descendants. Actual organization (ERs) can disappear, but virtual (genetic) are kept (here is it - immortality). On fig. 5.4.2 lines of life cycles of the evolutionary numbers most known for a science are resulted. Dynamics of LC can be presented in the form of waves. The atoms ERs, evidently, have finished a stage of initial growth and are in a metastable condition. In bowels of stars "burns out" hydrogen and synthesis of kernels of heavy elements proceeds. The stage of stagnation has not come yet. The Universe according to spectroscopy contains 2 % of heavy elements and 98 % of hydrogen, hence, very long evolution of chemical elements [73] still will proceed. At constant structure the absolute quantity of heavy elements in the Universe will grow.



Evolutionary time

Fig. 5.4.2. Dynamics of known evolutionary numbers (Scale any).

The atomic level of the World can be carried to "base" because it changes slowly and still "is not populated" finally. On a background of synthesis of new atoms there is a radioactive disintegration of less steady, that inevitably should lead to smooth change of the Universe elementary structure. When the temperature of the Universe has gone down from bowels atomic the ERs molecules have started to develop. In process of cooling a variety of connections increased. On a surface of the Earth molecules have replenished with fibers, RNC and DNA. At the present moment the person molecule of DNA is the greatest (length - about a meter) [138]. Whether there will be a further complication of this level, we do not know yet. It is possible to consider, that ER of molecules has not entered yet a stage of stagnation.



Fig. 5.4.3. Stages of life cycle (LC). S - logic of development

Extent of LC can be different, but the form of a curve has the certain configuration. On fig. 5.4.3 it is resulted typical S - a figurative curve of initial stage of LC. We shall consider initial S - the figurative period of evolution of the Universe [238] .According to a «standard model» [73], the microcosm was generated during 300 seconds, there were atoms of hydrogen and helium (steep slope) and already many billions years the Universe is filled by these atoms (slow recession).

Sky bodies - stars were formed also on S - figurative dependence. Homogeneous, primary, hydrogenium – helium plasma in the result of casual fluctuations has started to be stratified. Condensation began "to be pulled together" avalanchely with gravitational forces there were no yet dense gas heated spheres (stars). Compression has been stopped by forces of internal pressure. Balance of gravitation and pressure keeps a star from destruction during some billions years (a stable phase) [56].

It is very important to notice, that the numerical experiments modelling burning [101], develop on a similar dynamics. At the certain nonlinearity of environment processes of localization of burning in some zones develop, further processes are asymptotically accelerated, then there comes braking and disintegration of the arisen structures. Fire from an antiquity identified with a life. Fire and a life develop independently, demand resources, are poorly predicted, nonlineared.

Obviously, abrupt sites of LC curve cannot exist very long for then they will bring system in infinity, that is absurd, therefore behind abrupt rise always there comes stabilization and inevitable subsequent decomposition. "Steepness" of LC waves is not of a constant size. Some waves develop explosive, others smoothly. All depends on a "quality" of a positive feedback.

The reason of the growth termination is the exhaustion of resources. Any alive organisms, being made multiple copies in geometrical (or another) progressions, aspire to expansion, aspire to grasp a maximum of a territory and resources. The elementary diatom seaweed at unlimited growth for eight days is capable to increase the biomass till the sizes of the globe [39, 40]. But development degenerates at exhaustion of a feed resources. Struggle for a resource supports balance between predators and their victims [183].

Thus, the new phenomenon arises in bowels of an old one in the beginning of imperceptibly. It is noticed, when it grows roughly. Then there comes the period of stabilization and after any time - disintegration (dying). So L.Gumilev described life cycle of ethnoses [59, 60].

Let's look now at demographic curves of a population grouth on the Earth. During thousand years the population grew slowly. The person, having appeared on the Earth in small amounts (60-100 thousand individuals), was now multiplied up to 6 billion By the middle of the twenty first century it is expected stabilization at a level of 12 ± 2 billion. Further recession [91] is expected should begin. Curve of a human population LC looks, as S - figurative dependence with an aggravation.

It is necessary to emphasize, that processes with aggravation [101] occur in simple, homogeneous systems (a liquid, a population). In complex, heterogeneous environments it is difficult to create cogerention for all elements of a system, therefore the law of proportionality is broken and there is a decomposition.

From these positions we shall consider a hypothesis of the person origin from animal ancestors - primates. During 40 million years slow transformations of a brain led to occurrence of more and more intellectual kinds of monkeys. Chimpanzee has the biggest IQ, further gorilla, orangutan does, etc. [69]. And for any 500 thousand years there was a sharp jump of quality. One of branches of primates became the person. In pleistozen it is necessary to consider evolution of a brain one of the most rough processes of evolution. Many researchers did attempts to explain a jump to a reason, a flash of a supernew star [49], collective bents of primitive person, inversion of a magnetic field of the Earth, adaptation to thermal stress [116], a high level of a metabolism [98].

But the law of LC allows naturally (without an idea « interventions from the outside ») to explain improbably sharp jump in the development of a primates brain in pleistozen according to S - logic of development.

Race to reason went not only among primates. "Intellectuals" in the sea (dolphins, whales, octopuses), and among birds (crows, parrots) are known. It so happened, that the person has overtaken all.

The similar boom mankind experiences on a joint of centuries in the world of information technologies. Abrupt increase of the operative information volume [1] is now observed. Hence, it is possible to expect soon stabilization of this process and an output on a flat site of LC curve. The Internet "will choke" in its own information dust. The similar prediction can be made also for market economy. Rapid growth of the "free" market should come to the end with a quieter competition adjustable by the state.

As a whole the scheme of evolution can be presented as LC interference that complicates their quantitative studying of kinetics, but qualitatively they are presented by S - figurative curves. We investigate LC dynamics.

Time of an organizations life can change in very wide limits. Stars and planets exist during billions years. A proton - more than 10 years [73.] Mezons - shares of second. Chemical compounds can exist from shares of a second up to many tens of years. Association in the unit can keep from destruction. For example, the free neutron breaks up during 15 minutes, but in a structure of a nuclear kernel it can exist on orders longer. Life of atoms and molecules ER cycles have extent more than 10 billion years. Rate of these ERs development has started to be slowed down after rough start. Delay of evolutionary processes in lifeless substance can be caused, both decrease in average density of substance, and decrease in average temperature during expansion of the Universe, that is well-known from chemical kinetics. Duration of LC not always reflects stability of a system. Stability of the fly, which lives a day, can appear above, than the person's. In case of ecological accident long-living giants will die out, and flies will be kept [183]. The modern organization of industrial firms gets changeable forms with short-term of LC, that allows to survive in conditions of the dynamical market. Short-term of LC promotes the best adaptation and it is realized in conditions of fast changes of environment.

Nearby 4 billion years ago the molecules containing carbon, and minerals of an earth's crust (catalysts) have generated alive substance [238]. On all surface of the Earth there was a biosphere which with variable success continues to develop up to now. At the beginning evolution alive went slowly. The biosphere consisting only from monocelled procariots, existed nearby 1,5 billion years. It seemd that the life "made steps" a road to itself, changing an environment, accumulated in an atmosphere oxygen, creating favorable conditions for other organisms. The ozone screen in an atmosphere, protecting a life from a terrible sunlight was created. With leaving from a procariot stage and occurrence multicellular rate of new more perfect organisms formation was accelerated in sequence [200]: architarhy (700 million), - fishes (500 million), - overland позвоночные (350 million), - reptiles (320 million), - mammals (220 million), - birds (140 million), - primates (10-20 million), - the person (6-1 million). Figures in brackets specify an interval of time concerning the present. Apparently, for formation of each new alive kind billions, and hundreds and tens millions years were required any more. This process on fig. 5.4.2 is conditionally shown by wavy curves. Even more quickly change of kinds occured in family hominid (monkeys, people). The aggregate number of the population of a planet the Earth for an interval of the last 7-8 thousand years has grown from 10^5 up to 10^{10} person [91].

There are questions why evolutionary process is accelerated. We shall admit, people accelerate the development because of a competition, because the technosphere expands an ecological niche of the person, raises its intellectual opportunities, and the intelligence makes a new, still more developed technosphere. Due to it filched development goes on. But why were accelerated in the biozenose development, long before occurrence of the person?

To explain a phenomenon, it is necessary to investigate a set of facts. Probably, reduction of LC duration of various kinds of organisms in biosphere is the mechanism of adaptation of subsystems to accelerating oversystems development (biospheres). Every new ER actively appropriates resources. Therefore for self-preservation the environment should adapt fast, LC reducing (to similarly market processes in economy).

Being based on LC dynamics is possible to approve, that evolution is not monotonous process. In initial LC part processes proceed with acceleration. Conservatism wins a stage of stagnation, there is a braking. In globally extending Universe conservative gravitation "has won" local zones. Conservative forces of gravitation have created stars, planets, galaxies. Evolution of the lifeless world in the Universe, begun rough rates 15-20 billion years ago, is gradually slowed down (рис.5.4.2).

The biosphere has undergone about seven accidents [200]. There were periods when traces of alive substance practically disappeared from ground adjournment. Therefore the statement, that rates of evolution of alive substance monotonously increases, is incorrect. Periodic accidents rejuvenated biosphere. It repeatedly repeated a vital impulse, probably, each time more and more successfully.

As evolution is a consequence of combination theory rates of evolution can depend on a quantity of elements, from ways of a combination and mechanisms of successful designs selections. Above we already discussed the fact of accumulation in biosphere of genetic memory and opportunities of virtual "designing" of new organisms, that essentially accelerates process of new growths generation.

The phenomenon of LC reduction and the accelerated modernization of subsystems of biosphere testifies that the biosphere still is on abrupt site S - figurative LC curve (see fig. 4.5.2.), but development of biosphere inevitably should stop.

Probably, the person by activity has already started process of stagnation of "natural" biosphere. Development of "artificial" biosphere which is represented as coevolution under direction of mankind is planned. The destruction of biosphere together with mankind will occur after several billions years as a result of transformation of the Sun into the red giant [121] if there will be no other accidents earlier. We shall hope, that a reason, in any new version, will find a way to prevent space accidents. But while biosphere and the person restore losses from comic "impacts" and movements of an earth's crust only due to the accelerated duplication.

The opportunity of fast changes in the biospheric organizations can be consequence of low thermodynamic stability of alive systems. It is incorrect to think, that aggregation of elements in structures does by their steadier. All is on the contrary. The more communications in the system, the more probability of disintegration of any from them. The atom is "stronger" and more durable than a molecule. For example, to destroy a communication between nucleons, the temperature in billions degrees is necessary. To destroy an electromagnetic communication in chemical compounds is enough temperature to destroy up to 1000 K. Molekules are more difficultly to destroy, than cells and organisms etc. Albuminous molecules degrade at 300K. The alive organism can be lost from a dot injection. A polymeric molecule destructs more often, than monomeasures because there are thousand communications in a polymeric molecule. Albuminous molecules (the greatest) easily collapse.

In an alive cell billions molecules and this structure are collected became so astable, that if the new mechanism of self-preservation (a control) was not generated, process of evolution should stop. In case of ecological accident the maximum (complex) organisms first of all should be lost, and bacteria will survive, that more than once was [183]. Bacteria, having arisen about 3,8 billion years ago, have lived up to now, and giants of a reptile have disappeared [140]. The drop of water of the big size by gravity can break up to fineer [30], but fine drops merge. Large stars blow up, and averages slowly evolution. Earthquake brings down tops of mountains, the wind breaks tops of trees more often, than eradicates them from the ground. The death of an animal first of all destroys control systems (brain), and then bodies, cells die off. At loss of memory events of yesterday are forgotten, and events of the early childhood (sclerosis) are remembered. In biosphere the most ancient cells (procariots) till now were kept, but many new growths (for example, dinosaurs, huge mammals) have died out. Social systems collapse because of internal contradictions, but these processes are defined not only durability power, but also an administrative, information component.

Apparently, movement on an evolutionary ladder is not accompanied in any way by growth of structures stability though at each hierarchical level of complexity there is some optimum providing greater LC duration. Among nucleons a proton is steadier than a neutron. Among atoms iron is steadier others [117].

Large congestions of (star) atoms exist during billions of years, but their existence is a process of continuous changing ("dying"). A star arises and continuously changes the parameters: brightness, sizes, luminosity, spectral characteristics. Only a fact of kerneis synthesis in bowels of a star is constant. The star exists long, but it becones another every other second. It is possible to show increase in LC duration of alive systems in a process of quantities of elements increase in them. For example, the albuminous molecule exists some days. A bacterium - only 20 minutes. A cell in an organism - some months. An organism – a year and more. Kinds of mammals exist on the average 2-3 million years and die out. Generations of mammals - nearby 8 million years, families - nearby 30, groups - 73 million years, and types, for example, хордовые - hundred millions years, all biosphere of the Earth - 4 billion years [11, 206]. Term of biosphere "life" is commensurable with the life of a planet. Biosphere can be described as a continuous process of its components changes.

Transformation of complex system occurs as a circuit of consecutive transformations of its elements. The more elements, the longer time process of their transformations. Lengthening LC in the resulted examples is possible to explain as a parity of second and hour hands movement speed.

Thermodynamic instability of alive systems began to be compensated by processes of structures regeneration, i.e. operated processes. As a result alive systems exist not due to "durability", but due to owing processes of regeneration, self-restoration. A life is a process of constant maintenance steady unbalance.

In lifeless systems stability (long enough existence) is achievable under condition of minimization of kinetic energy of a system and increasing in durability of communications. In alive systems the nature had been invented an other, dynamic way of steady unbalance maintenance which consists in tracking defective units and their regeneration. In a cell there are albuminous molecules - the controllers revealing defective structures and causing "repairmen". In an organism cells which are replaced new periodically die off. And the termination of division of a cell is genetically programmed. Within the limits of a population one die and new organisms are born. Permanent updating of elements allows the complex organization to change, adapt for current of time flexibly. Such organizations keep not homeostasis, but support homeocines.

Integration and decomposition (macrofluctuations) various of ERs create stresses in the environment, induce environment to adaptive activity. Can stohastism create the directed movement of a system? We shall try to find technical analogues.

If a spike of wheat is put on a vibrating plane, it will move in one direction. If with any frequency and amplitude to throw on a wind sawdust,

a wind will carry away them in one side. On an abrupt snow slope any careless movement will lead to slipping downwards. If on an input of a diode to submit the variable electric pressure, on an output a current pulsing in one direction will appear. In all resulted nonlinear situations there is a vector of some field and fluctuation.

In the universal scale the vector of a field is created by expansion, (transformation) of a substratum, and fluctuation by stochastic processes « integration - decomposition ».

The resulted mechanical examples are too simple to explain all scale processes of homeocines. The phenomenon of controlling, defines the dynamics of homeocines. Simple reflections began to be replaced by anticipatory. The reason does not wait when a thunder will burst, but aspires to anticipate it. The operated (reasonable) organizations adapt more effectively, making anticipatory transformations (advancing reflection).

So, high lability of elements of biosphere is explained by their low thermodynamic stability. Astable organization can exist only at constant regeneration of the worn out elements, at constant reproduction (duplication). The mechanism of self-preservation in alive substance is based on an active work against forces of destruction, and it demands high expenses of energy.

Confirming this it is possible to cite data of a biosphere energy consumption gain for 1 million years, expressed in milliwatts on 1 of a body of weight [81]. In an interval this size makes 540-440 million years 0,011; (410-350 million years) - 0,014; (350-270) - 0,024; (230-195) - 0,076; (195-135) - 0,099; (110-70) - 0,192; (7-2 million years) - 0,269 mwt/g one million years.

A person has raised energy consumption, by means of combustible materials. A primitive person received with food no more than 2000 kcal a day. With use of fire consumption of energy has grown up to 5000 kcal/day. Now in the developed countries consumption of energy exceeds 200000 kcal/day on the person.

In chapter 4 it was marked, that communications become longer, address and organized. Lengthening of communications demands the raised power expenses for circulation of operative information.

Apparently, acceleration of development is accompanied by growth of energy consumption. However this energy is spent not for acceleration of biosphere development, but on self-preservation, a survival, prolongation of LC organisations. Energy is spent on steady unbalance maintenance. Evolutionary transformations carry out adaptation to changing world processes.

So, the main aim of alive is not the aspiration to complexity, but self-preservation, conservatism in conditions of a changing inhabitancy. Variability is an emergency measure at impossibility to keep a former way of life. As a good example market attitudes can serve in human society. The monopolist does not aspire to change the condition in economy if nobody threatens its well-being. The participant of the free market is under constant threat of bankruptcy, therefore it should indefatigably «twist pedals» businesses. There is a good saying: «From goods - for goods do not search».

The next reason of the accelerated variability can be high "valency" of complex systems (fig. 5.2.1). Evolutionary rows of high levels are capable to be integrated easily and desintegrate since thus it is not necessary to break a high power barrier. "Free" recombination increase frequency of tests and mistakes the probability of next "design" occurrence increases.

The accelerated disintegration, reduction of LC duration, is consequence of non-uniformity of development. Parts develop on individual cycles. Insufficient cogerentnost leads to the crisis phenomena, stagnation, braking (inertia), a suspension of development. For example, atoms arose not simultaneously (in the beginning hydrogen, helium, then the others). Speeds of molecules formation are various. Extinction and disappearance of alive kinds essences in biosphere are from hundreds millions years up to units. Evolution of the person from the environment of primates is the sharpest phenomenon. Development of ethnoses, states, nations occurs very non-uniformly. Presistents exist among animals and people.

Some subsystems, using favorable conditions as vampires concentrate resources, as a result there is a threat of disintegration of the whole system. For preservation of harmony it is necessary to stop the "gone too far" leader.

The stop of development occurs because of not conformity of needs and opportunities. Therefore rhythmical alternation of acceleration and delay (as in music), disintegration and synthesis of structures, displacement of focus of influence from the center (authoritarianism) to periphery (democracy, separatism) is observed.

Evolutionary processes are directed on creation of organizations, capable to coordinate activity of the parts developing in different rate. In structure not any elements can be incorporated. There is a limited set of connections ways. Restrictions can be not only on system compatibility, but also on rhythmics. There should be mechanisms of structures development rates coordination, synchronization of their evolution rates. In organisms such mechanisms have reached perfection. The size and growth of all bodies is precisely determined in time and space. Only the cancer tumour ignores the organism order.

In the natural organizations structures in different tempoworlds, almost not stirring each other coexist. For example, consciousness (young) and subconsciousness (ancient) successfully coexist. Ancient, inert atoms are combined with a dynamical body of a person. Between atoms and the person the difference in the age of billions years, but natural radioactive disintegration of atoms in an organism of the person (a natural background) does not influence on health. As examples can be symbioses of capitalism and feudalism, casts and democracy. Disintegration and regeneration of cells also is a natural background of an organism existence. However the destruction of the important body is accompanied by a death of an organism. Obviously, the age of a body and an organism is identical. So, synchronism, cogerentnost are most important for subsystems of one evolutionary age.

Subsystems can stabilize LC or accelerate development together with system and abovesystem. Evolution goes «short steps» with stops to wait lagging behind. The step forward is an innovation. The stop is homeostatics. The constant base is necessary to the top floors. Variability "top" affects on "bottom" a little, but evolution of a substratum and a microcosm strongly influences the top floors.

For example, nuclear processes in bowels of the sun threaten existence of biosphere and mankind. The aggressive behaviour of viruses can lead to extinction of alive essences. Energy of radioactive disintegration in a cloak provokes convective streams, drift of continents, formation and destruction of oceans. The life should adapt to these influences.

Let's consider under references other points of view on the reasons of evolution. In works [101, 34] affirms, that complication occurs for

economy, rationalization of existence. «Each new way of correct association of structures accelerates development of the whole and parts making it». United in structure come nearer to the superorganization, to infinite nonlinearity, and, hence, to the termination of evolution [34] more and more. In this statement it is meant, that complication is aspiration to minimization of energy, maximization of stability, and it generates evolution. However it is impossible completely agree with this statement.

Examples of growth (not economy) power "wastefulness" during evolution of alive objects were above resulted. However the aspiration to the maximal stability (a celebration of conservatism) correctly reflects the reasons of evolution. But this tendency is caused by conservative aspiration to a survival and LC lengthening, instead of mythical aspiration to perfection. Evolutionary transformations are a way of adaptation to changes of world process. An overall objective alive is not the aspiration to complexity, and a survival, self-preservation, conservatism.

The reason of a divergence of the conclusions received at computer modelling, with results of social synergetrics consists in the following.

Experiments on the COMPUTER are not correct for chain, incessant natural processes and model the completed single instance. In natural processes disintegration of some structures is followed with synthesis of new structures. The nature is never-ending LC circuit.

Computer modelling can help to comprehend, for example, development of monopolies, competitive processes of market economy. But for understanding of the processes occuring simultaneously at different hierarchical levels, in different subsystems with participation of uneven-age, heterogeneous structures in this model it is necessary to bring updatings.

Conclusions.

1. Synergetic concept of unstationarity of all organisations is shown in the form of life cycle.

2. The scheme of evolution can be presented as LC superposition of organisations. Cycles are imposed one on other, creating a complex algorithm.

3. Life cycle is a consequence of an antagonism of innovative aspirations and conservative forces.

4. The general law of conservatism is known in the mechanics as the law of inertia of Newton, in chemistry as principle of Le - Shatelye, in physics - as law of Lentz, in society - as traditions.

5. Gravitation can be considered as the conservative "elasticity" of a substratum interfering expansion by the Universe. Gravitation is a special case of inertia systems.

6. LC of biosphere is at a stage of growth, frequent changes of conditions therefore are observed.

7. LC reduction of various kinds of organisms in biosphere is the mechanism of adaptation to accelerating development.

8. Lability of the biospheric organizations is a consequence of low thermodynamic stability, "polyvalency", uncogerention, "virtual" designing of genotypes,

9. The main aim of alive is self-preservation, survival, conservatism. Variability is an emergency measure at impossibility to keep a former way of life.

10. At deficiency of energy and resources ERs survive, capable to concentrate resources effectively. Concentration of resources does them capable to generate new branchings.

11. The managerial processes directed on stabilization of a condition of complex systems is possible to consider inertial, conservative.

5.5. About some standard errors.

It is considered to be, that during evolution a variety of understandable structures [73] constantly increases. However it is possible to show, that D - I technologies can both increase, and reduce a variety of world structures. We shall consider sequence of occurrence of substance with the instruction of its variety [238]: quarks (6 kinds) - nucleons (2) - kernels of atoms and atoms (nearby 100) - molecules (10¹⁰), - monocelled (nearby $3 \cdot 10^4$) - cells in an organism (3 - 200) - organisms (1-2 $\cdot 10^6$). Apparently, in this sequence there is no monotonous increase of a variety. Two peaks of a variety are observed: at molecules, and at organisms. The maximum of a variety is necessary on molecules.

When there was a first cell, a variety of molecules on the Earth already was very much greater. Only for hundred millions years during of filogenesis a variety of kinds of alive essences has grown up to some equilibrium size. One kinds died out, others appeared. Sometimes the life on the Earth almost disappeared as a result of accidents (a variety) [200] sharply decreased, but in each concrete interval of time the quantity of types of chemical compounds on the Earth exceeded quantity of kinds of alive substance, and the quantity of types of cells always was essential less, than organisms. Initial, fast growth of a variety of biosphere has already stopped and under influence of people has started to be reduced. Thus, growth of a variety is not an invariant.

It is necessary to pay attention, that classification of any phenomena is always imperfect. The more complex objects, the more classification attributes are contined in them, the less precise classifications. Chemical elements, crystals are classified precisely enough, but alive organisms, their communities, civilizations till now are a subject of dispute. This fact also interferes with objective definition of "variety".

D- I technologies during evolution change quantity and quality (variety) of the world understandable elements. In order to appear one complex, big unit, it is required to spend a set of small units. At formation of molecules the quantity of "free" atoms decreases. The cell consists of molecules. An organism - from cells. Biozenosis - from organisms. One cell is synthesized from billions molecules of different type. Each next integration is accompanied by growth of the sizes, weights and complexities of new growths, thus the total understandable objects decreases.

A variety (quality) increases both at integration, and at decomposition. Integration reduces quantity of ancient structures (one is formed of several) and increases a variety of new ones. Decomposition always increases quantity and changes quality. Combinations D - I create nonlinear changes in structure of the world structures.

At integration of ERs various ЭРов a «iump» (mutation) in a new quality my be. For example, on a joint of physics and chemistry there was a science - the physical chemistry, etc. Russian nation has arisen from merge of Slavs, Ugrs, Alans, Turks [59, 60]. In mangrs thrickets fishes, with the combined system of breath and sight live. They are capable to breathe and see equally well, both on a land, and in the water. The combination of the

wheel car and the flying device has led to occurrence of transport on an air pillow, etc.

Decomposition seldom leads to novelty, usually there is a return to the past. Disintegration of chemical compounds gives more simple, but known molecules. Splitting of a kernel of atom forms some other (known) elements with smaller weight. Novelty can arise only at the subsequent integrations (combinations) of fragments.

Monotonous growth of a variety cannot be seen even within the limits of separate evolutionary of some. For example, atoms ER began with hydrogen and it was consistently supplemented up to the table of the chemical elements, however today new elements do not appear, but radioactive disintegration (reduction of a variety) is observed.

The first metaphytes consisted of several types of cells, now in an organism of the person there are about 200 various cells. It is not known today whether it occurs in the future reduction of their variety.

The mankind has appeared in Africa as a branch from a line of primates. Then it has expansively extended on the whole planet, having created a set of races and people which variety decreases as a result of extinction, destructions, integration. Set of ancient human tribes have merged in the large states. Classic languages disappear. Icstinct languages are more than appeared ones.

Diverse reptiles have reduced the number and a specific variety (there were turtles, crocodiles, snakes, lizards, etc.). Ecological niches of reptiles mammals have borrowed. It is difficult to define, what class was more various, reptiles or mammals (the died out reptiles are studied only by not numerous fossils).

Each kind of essences arose as a mutant in the environment of ancestors. The innovation arises only as a result of a "successful" integration and (or) recombination of existing elements. Then the mutation covers all population. At the first stages of growth an evolutionary row increases quantitatively and qualitatively, but at a stage of stagnation return processes are observed.

Essentially new quality can arise at casual ERs combinations, and as a result purposeful activity of the person. What is the role of accident in evolution?

Spectral researches of space have shown, that on distances in billions light years the elementary structure of a matter is identical. Absolute identity of atoms in different parts of the Universe cannot be casual and specifies uniformity of a world substratum and uniformity of synthesis algorithms. The similar phenomena can be found out also in more complex objects, for example, the fibers synthesized in different cells. The albuminous molecule is synthesized as an one-dimensional chain of amino acids. Then it spontaneously braids in a three-dimensional "design". A repeatability of this process surprises. Obviously, linear structure of fiber contains a "rigid" algorithm of three-dimensional self-organizing, but only at the certain characteristics of an environment. Change of temperature and pH environment can lead to denaturation of fiber.

If to assume an opportunity of any combinations of objects and their preservation the world should become infinitely various, however it is not observed. It is possible to assume some mechanisms of a variety restriction.

1. Following unknown rigid algorithm, steady structures in the limited assortment (determinism) are formed only.

2. The superfluous quantity of structures of various "durability" Is formed, but what maintain « natural selection » on stability "survive". Others break up

3. Growth of a variety stops as a result of exhaustion of an initial material.

The first mechanism is not real since the fact of existence of the several isotopes accompanying to each chemical element, hence, their formation is known occured variatevly. What quantity has arisen, and what was kept it is difficulty to find out, but the fact of stokhastism can be fixed.

The mechanism 2 illustrates restriction of growth of a variety by means of environment (temperature, pressure, concentration, presence of resources). This mechanism is widely known for scientists.

The mechanism 3 considers the fact of limitation of the resources necessary for course of processes. The permanent increase in a variety of "new" during integration can occur only at surplus of "a building material ». After its exhaustion construction of "new" can be carried out only from a material of "old". Except for the first-born certificate of integration all the subsequent integrative processes are carried out from a material of a previous level that reduces its variety. Thus, a variety of the world changes on complex dependence, but monotonous growth of a variety is not observed.

It is considered to be, that evolution is directed on increase of complexity. For example, «evolutionary processes go to creation all of more complex rganizations and structures by integration of various structures developing different rate, into evolutionary integrity» [101]. By Prigozhin development is «consecutive transitions in system of dissipative structures of continuously increasing complexity».

The material (chapter 2.1) stated in our monography leads to a return conclusion. **Evolution is not process of complication. The nature aspires to simplicity. The substratum is so combined, that is perceived as chaos.**

Here it is pertinently to result A.Puankare's statement: «we notice two phenomena which can be named mutually opposite: that behind a seeming complexity disappears simplicity, that, on the contrary, visible simplicity conceals in itself extreme complexity» [101]. We shall continue a substantiation.

It is known, that in free, colonial existence there is nearby 30 thousand kinds of monocelled microorganisms which functions are very various. At the elementary metaphytes only 2-3 types of cells. In a human body about 200 types of cells [84] which are narrow specialised and functionally easier, than in colonies. To predict reaction of cells of an organism is easier, than the bacteria floating in water, owing to high mobility of the last. Hence, cells of an organism have reduced a variety of functions. The alliance is always favourable an opportunity of specialization, more rational functioning.

Association, aggregation, integration are mechanisms of occurrence of new structures, due to reduction of a variety former.

This phenomenon is invariant. It is possible to result examples from the area of culture. «The phenomenon of human culture is based on restriction of degrees of freedom of the separate person. Cultures order social violence, replacing set of forms of violence over the limited quantity of lawful forms» [153]. The free economic market tends "to roll down" to monopolism, and there is a simplification of its architecture. Social processes will be investigated more in detail in chapter 6. Self-organizing, reduction of a variety of convective movements in a liquid was illustrated by Bernar experiences. In the environment with the certain parameters of viscosity, at «swinging» energy convective streams will be organized in the structures reminding beer honeycombs [101].

The electric field around of the charged ball has spherical symmetry. At disintegration of a ball on a part the last begin to make a start from each other. It is impossible to predict a direction of their movement. But the field, formed of two different named charged balls is asymmetrical (dipole). At splitting one of spheres a direction movement of fragments is predicted (aside another). Predictability of results is the certificate of simplification of system. So, integration of two charges leads to reduction of complexity.

Interaction between separate molecules is stochastic, but complex molecular complexes (catalysts) limit superfluous forms of movement. Enzymes of alive systems are even more unique on the selectivity.

A behaviour of a person in a collective becomes more determined, purposeful. Association in a system assumes reduction of elements freedom degrees.

Sinergetic principle of complexity "removal" has found practical application in works of prof. A.A.Kolesnikov at designing complex technical control systems [102]. During of some mathematical transformations "curtailing" complexity, revealing of several parameters of the order with which are easy for operating is carried out.

The Fig. 5.1.2 modelling integration of ERs on an example of weaving of a rope, also can exemplify curtailing of complexity. It is more difficult to describe a ball of a wool, than a rope which has less than significant properties, than an initial ball. We described similar evolution of system communications in chapter 4.2 where the tendency of reduction of quantity of "fine" system communications and increase of a share of the integrated liaison channels, i.e. process of integration of communications was marked.

As a known example the opportunity of the description of behaviour of molecules of gas can serve in some volume by means of only two parameters: "pressure" and "temperature" can served. Such parameters in synergetrics can be named parameters of the order.
So, evolution is not a process of complication. The aspiration to more simple forms of the organization in comparison with a primary substratum is carried out.

Conclusions.

1. A variety of the world is great, but monotonous growth of a variety is not observed.

2. Evolution is not a process of complication. The aspiration to more simple forms of the organization in comparison with a primary substratum is carried out.

6.1. Invariants of social synergetrics.

The synergetic approach applied to social systems, is not beyond philosophical publicism yet. However still K.Marx approved: «The history in itself is the valid part of the nature, the becoming of human nature. Subsequently the natural sciences will include a science about the person in the same measure in what the science about the person will include natural sciences: it will be one science». Therefore attempts are proceed to establish analogy between behaviour of natural systems, and reasonable activity of the person. Bases of such approach were put in pawn by A.Bogdanov [30] who had proved existence of isomorphism of different structures.

In Middle Ages it was considered, that the history does not depend on the wisdom of people. The totalitarian thinking considers, that the history is done by people [85]. «Historytism does not teach a divergence, but approves, that intervention in a course of history is vain» [176].

There is an opinion on impossibility of formal carry of natural-science synergetrics on human history. For example, Buzskij M.P. declares: «The statement, that society develops in itself, does not consider creativity of the person in formation of the order in a society. How objective law and subjective activity of the person is united in history?» [36].

If to assume, that creativity submits to laws of synergetrics it explains results of social development which follow synergetrics invariants.

Certainly, it is possible artificially to cause some deviations in world trends of development, but there are processes, to change which is not on forces o the persont. Even A.Bogdanov in the beginning of the 20 century wrongly considered, that the person dominates over the nature [30], but in 50 years this point of view has changed. The opinion on necessity of a consensus of the person and all biosphere has affirmed.

Toynbi wrote: «On a plenty of an empirical material we were convinced, that disintegration of a civilization, as well as its growth, there is a process continuous, cumulative, that this process has a repeating rhythm as behind each musical step there is a following step, and that a basis of the previous rhythm is « the Call – the - Answer » [205]. According to A.Toynbi the history composes of the independent set civilizations poorly connected with each other, each of which passes a way from a birth to death (growth, a break, a decomposition). Growth of civilizations a handwork of creative persons, but a civilization perishes from own hands. The ruling minority loses a creative power and energy. At Toynbi religions are taken as a principle classifications of civilizations, but Toynbi marks presence of historical development invariants, namely: cyclicity of processes. All civilizations pass the life cycle and break up. If to glance in conclusions of chapter 5.4 it is necessary to recognize, that A. Toynbi has noticed one of laws of human history.

L.Gumilev has shown, that fluctuations of historical processes (antogenese waves) occur not only in time, but also in space, on a surface of the Earth [59, 60]. These waves grow out activity passionar persons. Ethnic waves have similarity to life cycles of the state formations. More thin laws to authors did not manage to be noticed owing to monocasuality of their sights. On change to the old theories, connecting development with one factor, there should be the theories considering spectra of the facts. The present monography is devoted to this purpose.

A.Sorokin, unlike Toynbi, characterized civilizations by set of semantic systems. He reffered a language, a science, a religion, a philosophy, a right, an ethics, a literature, a painting, a sculpture, an architecture, music, economy, a policy, social theories to them. The material culture is a subject embodiment of all set of forth above senses. However it named the main value of all cultures religion. The history looks as a cyclic change of material and religious cultures. Each culture has a life cycle. Disintegration of culture is accompanied by the crisis of phenomena. As well as Toynbi, Sorokin sees the purposes of historical development in the boundless creation, perfection of true, beauty and goods, approach of the person to the creator. The mistake of Sorokin item consists that it linearly extrapolates this tendency in infinity, breaking law of LC. Besides the human history cannot be assumed as a basis at attempts of forecasting of the future of biosphere and reason. The human history represents only a short piece of development of a line of reason.

K.Jaspers [244] trusts (without the proof), that the world history is uniform for all people. All mankind has uniform sources and a uniform way of development.

At the beginning tribe societies existed in different parts of a planet under similar laws (why?). The states arose under similar laws (why?). Languages, writing, various cultures, religions in the East and the West developed independently, but under similar laws (why?) In chapters 6, 7 the explanation why different groups of people operated with ways similar to development of biosphere, why algorithms of biosphere development and human society are invarianted and why Ellin civilization has presented so many elements of culture to mankind will be given.

In searches of answers it is possible to result analogies for reflection. Why does the potato ripens almost simultaneously in various kitchen gardens? Why does an intelligence of different children ripens by seven years? [170]. Probably, one-age systems develop commensurable rates. In process of their maturing small starting distinctions are shown all more brightly. Therefore the European capitalism shows an explosion growth, and the East slowly assimilates elements of the western culture.

Apparently, each thinker has managed to notice, that societies develop according to some laws. But the uniform synergetic picture of evolution (history) of mankind till now is not created, since researchers tried to see the purpose of movement, being in "hold", instead of on the captain's bridge. It is impossible to separate the history of mankind from the "history" of the Universe. Mankind only the continuer of the World evolution. In the present work the piece of evolutionary time in 15-20 billion years that enables confidently is investigated to allocate invariants of development.

A.Toinbi has allocated and described 21 civilizations of human history. However V.S.Stepin considers, that at all of them variety, civilizations can be divided into two greater types, namely, traditionalistic type of civilization and a civilization which often is named western, on region of its occurrence. The western civilization is named technogenic as in its development the constant search and application of new technologies, including, and technologies of social management play the main role.

«Dynamism of a technogenic civilization contrasts with conservatism of traditional societies where activity and means very slowly, sometimes generating during centuries. Technogenic societies at once after the occurrence start to influence traditional civilizations, stimulating their variability. Sometimes stimulus become military captures, colonization, economic influence. The West involves all mankind in the technogenic world» [198, 199].

Classification of civilizations by Stepin V.S. is fair after the 18 century (the origin of capitalism), but before there were many other civilizations which technogenic to name difficultly but which on a level of technics exceeded the European level of that time. It is enough to compare technical achievements of Shumer civilization with a primitive - a communal system of Europe before 3 thousand years B.C. Besides the European technogenic civilization has arisen not in Europe, and in Asia, but its rapid development has occured in Europe in the17 - 18 centuries

Capitalism, industrial society has developed owing to the collective work organized by management. But occurrence of the first shops is fixed by historians not in Europe. Corporations of the handicraftsmen organized on an exclusive attribute have appeared in India (7 - 12 centuries), then in Byzantium and Italy (9 - 10 centuries), later in France (11 - 12 centuries), England, Germany (12 13 centuries) [46, 47]. Apparently, the industry panitrated to the Western Europe from the South under the communications developed still by Roman empire.

It is possible to agree with Stepin V.S. meaning that set of ancient civilizations were integrated into a technogenic civilization and traditional. So evolution in chapter 4.4 is modeled in this way.

Still half a century back very few people believed, that the technogenic civilization will lead mankind to the global crises. Ecological crisis, anthropological crisis, growing processes of alienation, the invention all of new means of the mass destruction threatening by destruction to all mankind - all this products of technogenic development. And consequently now there is a question: whether it is possible to leave these crises, not changing basic system of values of technogenic culture?

It is possible to declare at once, as a technogenic civilization, and traditional east will come to end of the life cycle. "Technogenic" develops

fast, therefore it enters into the crisis of disproportionate development. Following laws of synergetrics, this process should come to the end with delay, reorganization, new recombinations and origin of innovations. The problem consists in development of the alternative scripts which are not contradicting laws of development of greater systems, i.e. the script of coexistence of two civilizations.

«Looking back at already come to pass history, it is possible to specify the reasons why this or that script of development was realized, and to open logic of this development. But, looking forward and doing forecasts, we can designate only a fan of opportunities and, at the best, define, what of them more and what are less probable » (Stepin).

The history is consequence of a choice of politicians and consequently it is necessary to arm them knowledge of development laws and technologies of decision-making. If invariants of development are known it helps acceptance of strategic political decisions. The technology of a choice from alternatives is typical technology of modern management [48]. But in political decisions such technologies still are not applied.

The synergetrics puts problem of development spectras definition of economic and geopolitic structures before scientists. "There is nothing more difficult, than art of political control: even the most skilled ones at the hour of their death admitted that they always considered themselves in it as beginners ». The reason that it is impossible to formulate firm and strong rules of the government, are suitable for all tims. For this reason, «concepts of social synergetrics should focus politicians on a choice of those decisions which are focused on laws of evolution». There is a need for " theoretical history " - a science dealing with historical processes. Necessity for such discipline is connected by that, being engaged in strategic planning, it is very important to understand, between what alternatives to have to choose» [132].

The explication of invariant laws of development in history is possible only in the event that invariants are searched from height of " a bird's flight », only then «it is possible to see a wood behind trees». «You never learn, on what the mouse if will carefully study its separate cells under a microscope just as will not understand charm of a Gothic cathedral is similar, subjecting its each stone to the chemical analysis» [145]. In other words, the history should be cleared of accidents.

The present chapter accumulates cholistic methods of research: the theory of the organization by A.Bogdanov (isomorphism of natural

complexes), cosmism by V.V. Vernadsky (unity alive and inert), the general theory of systems (isomorphism of all organisations), the theory of cybernetics, synergetrics. Using, the deduced earlier, integrated concepts: SEI (unity of substance, energy, the information), PTB (unity of the person, technics and a biolocus), ER - an evolutionary number (unity of the past, the present and the future).

However it is impossible to understand behaviour of people from positions of cybernetics, as in person - machine systems there are new, not formalizable concepts: the authority, the property, emotions, preferences, the - another's, egoism - altruism, etc. Therefore at research person machine systems all the listed scientific views due to be added by psychology of the person behavior, developed of mentality of animals (etology).

Each person has an aspiration to divide the world on "I" and «not I». In a society this aspiration is expressed in classification of people on «ours» and "another's". The program «ours - another's» plays the important role in human history. Management between «ours» proceeds not as between «another's». Altruism is more often realized among «ours», and egoism concerns "another's".

Successes of nonlinear physics have opened slightly only a part of social problems. They do not replace direct researches political, economic, and social systems. The erroneous choice of alternative of development can end with destruction of mankind. In this connection it is possible to discuss the citation very far from synergetrics: «would we keep an oasis of a life in the Universe and a life which was handed to us over with the divine nature?» [64]. Knowing the law of life cycle it is possible to answer firmly: «No as everything has the beginning and the end. Through 5 billion years the Sun will finish the life cycle and together with it the biological life on the Earth will will come to the end». Degeneration of the biological form of reason can occur and earlier on many other things to the objective reasons, but any survival is carried out by homeokinesis. Therefore it is not necessary to regret, that changes are coming, old always inevitably dies off. The mankind should twist pedals of stability, as to the bicyclist (Stepin). It is a natural process of the whole Universe and the person cannot be an exception to the rules. It is more correct to bring an attention to the question as the mankind in the modern condition will long exist and that will come of it in the stead. Sense of existence of all alive not in homeostasis, but in creation of a new, following reasonable level of the World.

Conclusions.

1. Various laws of human history are not managed to be noticed by researchers owing to monocasuality of their sights.

2. Invariants are necessary to search from the height of «the bird's flight», only then «it is possible to see a wood behind trees». In the chapter the complex of cholistic methods of research is used.

3. In the present work the piece of evolutionary time in 15-20 billion years is investigated and it enables confidently to allocate invariants of development.

4. Stability is possible only dynamic, but for this purpose it is necessary to work as mind and technics.

5. It is necessary to arm politicians with laws of development, for reduction of probability of mistakes at a choice of political decisions.

6. Sense of existence of all alive not in homeostasis, but a creation of a new, following reasonable level of the World.

6.2. The system analysis of society.

On the scheme 2.4.1. "tree" of paradigms, explicated from many scientific directions is resulted. Among them the central place is borrowed with a paradigm the World systimstic. The system sight means exarticulation from the complete World «functional elements» and their communications. Synergetic approach to the system analysis recommends to consider elements of systems from the point of view of their various age.

In chapter 2.4 it is noted, that an element of a system can be not any fragment, but that functionally provides purposeful activity of a system. Unfortunately, sociological researches of mankind do not follow laws of the system approach, antropocentrism dominates over them. «The modern mankind enters the world created not by the nature, but by the person» [64]. «The posthuman world getting independence from its creator» [114].

The albuminous form of a life is in strong dependence on a "inert" matter. It is enough to study a dynamics of tectonic plates of an earth's crust, a birth of the oceans and continents, adaptation of alive substance to cataclysms of a geosphere in order to get rid forever from antropocentrism. In a basis of all cataclysms of an earth's crust energy of a cloak which is

scooped from radioactive disintegration of atoms is. It is an example of influence of "base" on «secondary formations». It is necessary not to forget, that the person is an element of biosphere and the whole Universe who never will be able to become independent of a system. Character of communications can only change. One tights weaken, and others - amplify. The technosphere is a natural subsystem because all resources are consumed from a biogeosphere, and all wastes are sent back. The biogeosphere, the mankind and the technosphere are a uniform system, therefore an attempt to see the mankind as something separate (standalone) from nature, is incorrect.

Sociology studies the mankind from within, proceeds from a person, therefore there are not systematic myths about exclusiveness of the person, its isolability from nature, about a unique ability of mankind to transform a biogeosphere. To deny this myth it is enough to recollect (or to learn), that at the beginning of biosphere monocelled procariots have changed an inhabitancy so much, that sent away themselves «in resignation». They a long time ago transformed an atmosphere of the whole planet, "having pumped up" it with oxygen, and the person just starts to generate hotbed gases. The myth about a harmony of the nature and disharmony of mankind stars from not system comparisons.

Harmony (consensus) is not the permanent phenomenon in an eternally changing world. We shall add, that harmony is an unusual occurrence arising at casual interlacing of ERs. Harmony results from the struggle, cutting of superfluous (extinction), it is established for some time, again is broken, perishes and is born again (the law of the life cycle). Harmony is observable only as the short-term phenomenon. The genius modeled Venus, has represented a harmonious instant of its life cycle. The same Venus in her old age - is not the sample of harmony any more. Therefore, the mankind never will reach a long period of harmony with biosphere, as Sizif never will role the stone on the mountain.

Sociosynergetics collides with such huge number of parameters of the order, that the formal description of complex systems is not possible. In order through heaps of the isolated facts to make out the invariants nature, we had to add the general theory of systems by synergetic concept of evolutionary row (ER). ER is the multivariate element of a system developed in time. The consciousness "sees" its beginning in fundamental material processes and mentally continues in the future. In reality there is only a part ER (the present), however the present stores memory of the last events. The past is virtually curtailed in the present. The human history

can be represented by a set of ERs. They are in hierarchical and anarchical attitudes, branch or integrate.

It is necessary to reveal nascent element of human society which can apply for a role of evolutionary unit. In the synthetic theory of evolution it is considered to be evolutionary unit not an organism, and a population [73, 139, 140]. In a human society of the individual it is also impossible to consider as elementary evolutionary unit (though all sociologists consider the person as an element of society) since the individual is not capable to independent existence. Any person is surrounded always with relatives. In order to continue a mankind a tribe, a collective, a society is necessary. In a human population not only biogenes, but also siciogenes (knowledge, culture) are integrated. In order That the elementary society to exist as system, an input (sources of resources) and an output of products of ability to live should be. It is above proved (chapter 4.2), that an element and its communications are functionally inseparable, the minimal complete set of communications allow nastzent element to exist.

In section 4.5 such element has received a name IAO (invariant of alive organization). It is possible to see IAO in monocelled and in mankind. Synergetic thinking is capable to unite various alive organizations in a related number, as has been shown fig. 4.5.1. We shall continue researches IAO of mankind.



Fig. 6.2.1. The scheme of the secondary IAO of an industrial type with CMP contour.

In structure of IAO human collectives are presented by block "C". This is a tribe, an ethnos, a church, a state, a region, a city, a manufacture, a family, etc. Collective "C" can have various number. People in block " " are in tribe, friendly, class, ethnic, political, economic and other mutual relations. Various IAO form political, economic, scientific and cultural systems between themselves. People never had anarchical collectives. Already in a primitive tribe people had leaders. On the ground there were not separate people, but the social formations of people applying for the right to have the property. Attitudes of the property, authority distinguish IAO from a simple cybernetic system (in cybernetics such concept does not exist).

The biolocus "B" is a source of resources. First of all it is an allotment. Alongside with biolocuses biogeolocuses (ore, stone, oil, coal, gas, water and so forth) were maintained. Blocks "M' and "P" represent means of extraction and processing of resources. They are in someone's property. As blocks "M" and 'P" in ancient civilizations «alive machines» (slaves, serf, working cattle) were used. During development muscular force of slaves, peasants, working a mining industry was ever less used. The technogenic component of work more and more increased. The person compensated lack of physical abilities collective actions, then force of animals and, at last, means (machines and mechanisms). There were collective technical "hands" (digging machines) and collective "legs" (means of transportation).

Up to the 18 century the technics used only 2 % of energy. Animals delivered 68 % of energy, and muscular force of the person - 30 %. In the 20 century muscular energy was reduced up to 3 %, and the power of technics has grown up to 96 % [16]. Evolution of a technogenic component of blocks "M" and "P" are resulted in the following section.

Block "B" has evolutionised. The primary biolocus "B" provided collecting fruits, roots, hunting and fishing. Then it was transformed into cattle breeding and plant growing. It was necessary to transform also blocks "M" and "P".The source of resources were attacks, campaigns, wars with neighbours. Capture of slaves and "another's" biolocuses was a version of hunting, together with a biolocus means of its operation ("M" and "P") were also appropriated.

Up to 15 century the biogeolocus satisfied needs only its "own" block C (subsistence economy). With increase of labour productivity due to development of technics there was a superfluous product which could be exchanged and sold. Economic relations intensively began to develop in this period.

Wars and expluotation have allowed to concentrate the capital in the some IAO. Occurrence of an exchange by substance (economy) has made possible to specialize on manufacture of products of secondary processing SEI of streams (industrial IAO), therefore the some IAO have become simpler, having lost direct contact with a biolocus (fig. 6.2.1).

Development of economic, scientific and cultural communications of human society has led to occurrence in the cities of IAO of CMP type. Manufacture, manufactories workshops, artels, factories, are examples of CMP elements which are not having direct contact with biosphere. But their activity remains completely dependent on the presence of biogenosphere resources and from existence of primary IAO with CMPB contour.

Specialization always reduces degrees of system elements freedom, does behaviour of elements easier, but more qualitative. As an example animal parasites can serve who have lost sight, function of search of food, have simplified the bodies, but have narrowed the ecological niche, have got under full dependence on "owner". The similar phenomenon has occured and with secondary, technospere IAO. Industrial elements became elements of society. This fact has allowed some researchers to come to an idea, that mankind has come off biosphere and has started to develop an independent way.

However input of CMP element nevertheless is connected with biosphere through a circuit of converters $(X_1 \ X_2 \ ... \ X_n)$. Converter X_1 is an element of CMBP type, the others - CMP. Other circuit of converters of a product $(Y_1 \ Y_2 \ ... \ Y_n)$ connects output IAO with biosphere. Only waste come back Into biosphere. All converters of a target stream "Y" have CMP structure.

The mankind essentially cannot live without a biogeosphere because the Earth is an isolated enough system and except for a solar energy all the rest is endogenic. Biosphere and the person use energy of the Sun, but mineral raw material scoop from an earth's crust. For example, for billions years the biosphere "has eaten" a bark of the Earth several times. The alive substance actively processes inert [6].

Initial IAO (bacteria, plants) were authortrophorn, used directly energy of the Sun and minerals of a geosphere. Plants are primary IAO. They are still poorly differentiated on blocks C, M, B, P and maintain a geosphere by leaves and roots. «Grasseaters» use as food carbohydrates of vegetative "manufacture". Predators consume even more concentrated meat products (fibers). Predators are seperated from plants by the long trophic circuit (analogue of row Xn). Authotrophs are the primary source of food resources of a planet and in all subsequent trophic circuit «the degree of parasitism» increases, if parasitism to estimate on a degree of reduction of expenses for extraction and mastering accrues food.

Primates actively eat vegetative and meat food. Primitive people began to use meat more. In the further development the mankind has gone on a line of parasitism since "food" energy sources began to be replaced with energy of fire wood, coal, oil, and then still more concentrated electric energy. The same tendency is observed and with food resources of the person. From crude products the mankind has passed to boiled, fried, concentrated products (oil, cheese, egg powder, and so forth). By means of a technosphere process of extraction of mineral raw material and organic food stuffs essentially becomes simpler. It is possible to notice, alive aspires to be rational, i.e. to reduce expenses for extraction of resources within the limits of the opportunities, but the person has made this aspiration the purpose of the existence. The modern economic science a level of development of the country and a society not correctly estimates (GNP) by quantity of the used products.

Proceeding from the stated concept, it is possible to find out, that the some IAO of CMBP type gradually become authotrophs [43], which by means of a technosphere, using energy of heat and light, from mineral resources synthesize organic chemical compounds. As an example of an artificial biolocus hidroponika can serve. In this technology instead of ground mineral solutions, a sunlight, and vegetative biochemical processes are used. The beginning of authrophor way began from bacteria, and the person has picked up relay race. Agriculture is means the person authrophor since monocultures differ from natural biotzenoses and demand technogenic technologies.

Development of a network of communications between IAO has led to the necessity of distributive systems occurrence of CPM type (a shop, a warehouse, transport organizations). So, mankind is a set of IAO of CPMB and CPM types, which are communicated by economic, cultural, scientific, political network.

Evolution IAO rows and their components can be in hierarchical and anarchical attitudes. The mankind is not an exception of this rule. And in a primitive tribe, and in a modern society inside of social groups always there was a hierarchy of authority (the leader, the feudal, the lord, the king, the prince, the emperor, the president, etc.). It proves impossibility to operate a lot of people, carrying out various functions by means of one person without help of management personnel. The hierarchy of authority takes place in a tribe, a state, an empire, in the management of a city, a feudal facilities, an army.

However interaction of the separate hierarchically arranged groups can have the anarchical nature based on complimenterity. Mutual relations between different tribes, states, religious groups, political parties, scientific schools and market attitudes are based on self-organizing without a typical imperous pyramid.

Between economic organizations (firms) as hierarchical attitudes (corporations, concerns) exist, so as anarchical attitudes (alliances, unions) do. The modern mankind as a whole is arranged anarchically, but the tendency to coordinate the activity by means of the United Nations, Secutiry council, the World bank is observed.

It is necessary to notice, that the concept "hierarchy" in sociology, politics is based on representations about authority, on dependence on some group of persons. In religion the maximum hierarch (the God, Logos) corrects both slaves, and their lords. Divine force is a metaphor of not understood processes. In ch. 4.3. it is shown, that the maximum hierarchy of the World is the substratum which laws of development is impossible to cancel. All follow them both worms, and the highest animals, both slaves, and lords. For example, nobody can cancel the law of universal gravitation.

Conclusions.

1. Biogeosphere, mankind and a technosphere are a uniform system.

2. Mankind is a set of the invariant alive organizations specialized on an industrial activity, connected by economy, culture, science, policy.

3. IAO are connected hierarchically and anarchically.

4. In the wild nature, a society and a technosphere of the organization are created by a combination of known (available) elements.

5. The social genetics of mankind uses the same algorithms, as biogenetics of animals does.

6.3. A technogenic body of mankind.

Specific attribute of the person is ability to work. We shall define work as a process of an environmental change, including with application of the instruments, directed on a survival and expansion of the work subject In IAO labour processes are carried out by means of blocks M and P.

As any natural phenomenon work has appeared long before the person. In the environment of animals it is also possible to observe elements of work, including with application of instruments. «Labour has made the person from the monkey» (Engels), hence, labour existed before the person. Marx wrote: «Darwin has directed interest on history of natural technologies, i.e. on formation of vegetative and animal bodies which play a role of instruments of production in a life of plants and animals».

Labour as means of a survival was used by all alive essences. The mole works on digging holes, beavers work on construction of underwater habitation. Extraction peep, hunting, construction of refuges - all this is generalized by concept "labour". If the modern professional hunter receives money for his work why hunting of the neanderthal man or the crocodile cannot be considered as a work?

Animals survive, mainly adapting their body and functions to the changed conditions. Animals use parts of their body as instruments of work (natural blocks M, P). But animals work is only an addition to the basic adaptive opportunities.

The person has inherited from mammals all the basic subsystems of their organisms: finitenesses, a skeleton, respiratory, nervous, digestive and other systems. Sense organs of the person, system of protection and attack have appeared weakened. The reason, the work, advancing reflection, a collectivism of behaviour (block C) has sharply amplified. Disharmony between very developed control system and executive systems of the person was showed. Under laws of synergetrics for alignment of disproportions development of reason should be braked, that other subsystems could liquidate the backlog. In order not to break harmony, the reason which has come off in development from other subsystems, has been compelled is artificial to strengthen the executive functions which have deadlocked. The reason can not influence on "conservative" gene of the person yet to improve functions of a survival at a biological level. Therefore for short time technogenic hands, legs, sensor controls, intellectual systems (artificial blocks M and P) have been created. It is not excluded, that the genic engineering in the future can transform a biological basis of the person but while development has gone technogenic by.

By means of reason the person got an opportunity to accelerate his evolution, but in order to prevent disproportions it is impossible to exceed opportunities of biosphere. Either the person should limit the expansion, or should find a way of biosphere efficiency increase. It was not possible to stop mankind number grouth till now, therefore the person has increased operation of biosphere and has passed to operation of artificial bioloci (agriculture). Creative activity is directed on creation of abnormal systems for biosphere.

So, technogenic blocks M, B, P are created, which without participation of the person are not capable to self-development. Left without supervision, they will break up and will be absorbed by biosphere. The person cannot live without a technosphere and it cannot exist without the person, i.e. for the first time for billions years during evolution of blocks M and P has arisen unique IAO (biotechnotzenoz). However its occurrence has been prepared by all self-development of biosphere. We shall show, that occurrence of mankind does not contradict laws of synergetrics of the Universe and biosphere.

Indemnification of physiological lacks is known to biosphere before occurrence of the person. An eagle breaking an egg of an ostrich by a stone, a stick in a beak of a bird, a stick in hands of the monkey, a gorilla, throwing subjects, are examples of "tools" use. Indemnification of own lacks means is consequence of labour and reasonable activity of the person. Therefore evolution of mankind represents continuous search of of technogenic protection means. Australopitecs about one million years were not able to do anything else, except to use sticks, stones and to process (to split) a pebble (it already were primitive technogenic blocks M and P).

Being protected by technics from natural selection, the person loses, forgets technologies of a natural survival. Many functions atrophy as superfluous (adaptation). This way has resulted the person in a trap of dependence on the technogenic environment created by him. From this way the person cannot curtail any more for everyone develops in himself deposits which he has. Work in all forms is unique means of mankind survival. Not all technologies of work promote prosperity of mankind. In fact and at monocelled not all mutants are successful. We shall consider evolutionary numbers of a technosphere [46, 47].

An evolutionary row (ER) of transportation means (legs, transport). Portages (100 - 6 thousand of years BC); a sailing charter, logs, packs, reed boats, mortising logs, poles, oars (40-13 thousand of years BC); sledge, skis (13-6 thousand of years BC); pack donkeys, bulls, camels (3 - 4 thousand of years BC); carts (sledge + wheels, 4 thousand of years BC); crews (a cart + a horse, 4 thousand of years BC). Further rail transport on coal output (15-16 centuries), steam vehicles (England, 1700), steam locomotives of railways (England, 1830), the car (the carriage + the engine, 1700-1890); homological number of 20 centuries cars which proceeds also today. From this trunk a number of rail vehicles with a drive was separated: horses (1800), the steam machine (1804), a diesel engine (20 century.) and electrodraft.

ER manipulators (finiteness, hands). An early paleolith (600-100 thousand of years BC). Manual cut from splinters of stone, stakes, shells, bones. These instruments armed a hand, did efforts concentrated.

Middle paleolith (100-40 thousands of years BC). There are compound instruments (combination theory) a stick + a stone + a bone. There is a "lengthening" of a hand: a stick, a cudgel, a stone axe, a pole.

Late paleolith (40-13 thousand of years BC). Lengthening of a hand proceeds: throwing spears, darts, a bow, boomerangs.

Neolith (6-4 thousand of years BC). The weapon, tools adapt to a hand (ergonomics). Machine tools are invented for processing a stone, a horn, a tree, a metal (5 thousand of years BC). The potter's wheel and products from faience have appeared nearby 4-2 thousand of years BC. (Sumerian, Crete, Egypt). From iron sickles, scythe, punctures, chisels, axes, chisels, saws (Sumer 3 thousand of years BC) were produced. A variety and specialization of tools grows, the bow is improved, arbalest, throwing machines appeared (Greece 7 - 9 centuries BC).

Gunpowder is used for a throwing of subjects (the beginning of our era). Rockets (6 century) and fire-arms in China (8 century), fire-arms in Europe (13 century). Bronze guns on fleet and on a land (14 century), manual fire-arms (the end of 14 century), pistols (the end of 16 century), combat missiles (Russia, 1815), a machine gun (the end of the 19 century).

ER of engines: muscles of the person (100-13 thousand of years BC); muscles of animals (3-2 thousand of years BC); wind engines (sails 2,5 thousand of years BC); water wheels (5 century BC); steam engines (1700); internal combustion engines (1860); gas turbines; jet engines; electric motors (the beginning of the 19 century).

ER of sensor controls, receivers of the information: eyes, glasses with holes in plates, glass glasses (13-14 centuries Florence), a microscope, a telescope, warmvision, gauges of radiation, receivers of radiowaves, cameras, movie cameras, videocameras, etc.

ER of protective environments (leather): means ecological homeostasis (dwellings). Caves, canopies, huts, fire (100-40 thousand of years BC). Chemical processing of skins, weaving from a rod, stalks of leaves. Constructions from a tree, bones, skins, a dugout from poles covered by skins. Partitions in houses and caves. Dwellings on timbered floorings, mud houses, brick construction (cities in India in 2-3 thousand of years BC and in Babylon 1 thousand of years BC). Construction of pyramids (Egypt 2,5 century BC). Stone houses of complex architecture appeared in Greece and Rome with a high level of comfort. (waterpipes, water-drains, baths with heating, bathrooms, the portable centers, fireplaces). Multi-

storied houses were under construction in Rome. Also there an air and water conditioning were made, cemeteries were built. Later cities only were extended, provided with transport, illumination, factories, shops, educational institutions.

Lighting devices (stone flat dishes for fat) appeared 40-13 thousand of years BC. They were preceded with artificial extraction of fire by friction (100-40 thousand of years BC). Illumination of mines by fatty lamps from chalk pieces, burning branches, birch torches, pine candles in houses (6-3 thousand of years BC). Use of oil for illumination (Babylon). Till 15 centuries the center served in the Europe for illumination, there were oiled paper windows, oiled lamps from clay, glass, metal. Electricity lamps, luminescent and semi-conductor fixtures, lasers (20 century).

Protection of a body against a cold: clothes from skins, flax (13-6 thousand of years BC). The first weaving looms (5 yhousand of years BC). Tanning and fur manufacture. Fabrics from hemp, flax, wool (Egypt 3 thousand of years BC). Carpets in Persia (8 century BC).

The power of mankind and biosphere developed in the following sequence. Energy of the person muscles; chemical energy of burning; energy of bulls, donkeys, horses movement. Energy of water and wind. Burning of coal, later oil and gas (steam machines, ICE, turbines). The Solar energy (batteries, solar heaters); an atomic energy; transformation of thermal energy in electric, light, use of heat of bowels.

Resource coordination. Obligatory attribute of IAO is the biogeolocus, the block of supply by resources. We shall consider evolutionary dynamics of functioning of this block in a human society.

Collecting of vegetative and animal food. Extraction of a superficial granite, slate for stone products. Hunting for animals, fishery (13-6 thousand of years BC). Breeding of sheep, goats, rams, large livestock (Iran, Iraq 10-7 thousand of years BC). Transition to cultivation of barley, wheat (Near and Middle East, Central Asia. 9-7 thousand of years BC). Manufacture of beans, pepper, agave, pumpkin, cotton (America).

Mine extraction of stone: siliceous slate, basalt, abrasive sandstone, greenstone. Steady transition to agriculture and cattle breeding (6-4 thousand of years BC). Expansion of extraction of stone, transition to extraction of native gold, copper, silver, lead and tin. Development of metal instead of stone, melt of copper from ore (5-3 thousand of years BC). Deep mines. Pig-iron in China (4 century BC). Iron in India (4 century BC). Iron in

Egypt (2.8 thousand of years BC). Iron ore were extracted from marsh, meadow and lake ores. The invention of bronze (Iran, 3 thousand of years BC) and distribution to other regions of a planet.

There were fish and animal industries, agriculture, system of irrigation. Development of a clap, silk. The invention of faience and glass (Egypt, Sumerian, 3 thousand of years BC). Development of mineral raw material for preparation of paints. Extraction salt from sea water. Bone glue (3 thousand of years BC). Use of clay, plaster, pitch, asphalt, bitumen as connected components in construction. A reed was used for ship construction (Egypt, 3 thousand of years BC). In Rome gardening and poultry farming were developed (3-1 thousand of years BC). The weaving loom, a lathe on metal appeared in the 6 century BC.

Apparently, before our era the basic inventions functionally providing existence of people have been made. Evolutionary technogenic rows come out from neolith by the roots and proceed now. The quantitative growth of a technosphere connected with growth of the population and increase of a consumption level is swept especially up. Extraction of various minerals and specialized commodity manufacture developed in 14 century all over the world. A variety and quantity of the extracted minerals (coal, iron, oil) grew. In 20 century there is an extraction of radioactive substances, an intensive oil recovery and gas, synthesis of polymeric materials, composites, manufacture of hydrocarbons. Resources were taken not only directly from a biogeosphere, but also wars for resources with "another's" IAO were conducted. During 6 thousand years there were 14500 wars [84].

In Europe only since the 18 century intensive development of technics has begun. Ellin culture assimilated the Arabian East and later - Europe. Unique advancing development of capitalist Europe is caused by a successful combination of technical basis, political and religious installations (concentration of potential by integration of ERs). The authoritative device and mentality of the East braked the creative initiative, development of technics.

So, blocks M, P in IAO human society developed as continuation of ERs biosphere.

If blocks M and P continue evolution, biological evolution of a human brain, possibly, has ended. The block C continues social evolution (redistribution of property, struggle for authority, for a resource, transition from self-organizing to management). We have in detail enough considered development of blocks M and P, and were convinced, that their development synchronously to development IRO. Integration and decomposition of technical systems is observed. A variety grows. However without system communications between blocks C the picture will not be full. Therefore we shall continue to investigate comparative evolution of system communications as in a society so as in the surrounding nature.

Conclusions.

1. The person represents the social mammal who has inherited from biosphere all genetic material, capable to survive by means of creation of an artificial, technogenic inhabitancy.

2. Evolution of IRO is traced from monocelled up to the person and accompanied by evolution of blocks M, P.

3. The mankind continues to develop ERs by means of transportation (substitutes of finitenesses), means of work (substitutes of hands), nomeokinez means (an artificial inhabitancy), reception and processing of information. Collective adaptations (houses, transport, roads, transport highways), technotzenoz are created.

4. Technical substitutes of individual bodies (heart) and touch systems (glasses) are created, it is observed kiborgisation of the person. «Antropic» energy due to intensive consumption of various energy from an environment is saved.

5. The collective block C, has stopped biological development, but continues to develop in a direction of association in uniform information system, growth of a variety, specialization, differentiation.

6. Decomposition, integration, combination, specialization, growth of a variety, the law of life cycle are invariants.

6.4. Differentiation and integration in mankind history (D - I processes)/

In chapter 5 processes of decomposition and integration of ERs are recognized as the main mechanisms of development. This idea is not new. A.Bogdanov [30] considered conugation (connection) of complexes (systems) by means of ingression (adhesions, pasting). Decomposition by A.Bogdanov was called desintegration. These terms in a modern science have not taken root, but have served as the base for cholistic thinking. We shall consider D-I processes in a human society. We shall begin with ethnogeneses studied by L.Gumilev [59, 60].

Ethnoses which do not have genetic relationship, are more extensive collectives, than tribes, clans, and are consolidated on the basis of social uniform behaviour. The need to have a "sign" on an accessory to a "flight" is defined by genes. In ethnos people are united (integration) on some sets of complimentary attributes (ingression).

For self-identification and association it is enough to have several symbols. In China to be considered as the Chinese, it is necessary to apprehend bases of the Chinese morals, formation, rules of behaviour, but knowledge of language is unessentially. In Iran as the Persian considered the one who esteemed Aguramazda and hated Ariman. To become chunn, it was necessary to marry. At Mongols the horde was united by discipline and coordination. Bravery and readiness to submit was required only. The Frenchmen communicate in French, Kelt, Basks, Provencal languages, but it does not stir to their ethnic unity. Mexicans, Peruvians, Argentins speak in Spanish, but they are not Spaniards.

The accessory to a community or church can serve as association for ethnos. For example, parting with a life for the bible was a symbol of selfaffirmation of Christians. Presently the self-sacrifice of shachids is a symbol of the statement radical Islam. Integration always occurs on the basis of complimentaric communications.

The ethnos is a complex combination of already existing ethnic substrata, melting in the boiler alien cultures, encouraging complimentaric communication. Often members of the lost ethnos are a part of another. One ethnos can live in the different states. **So, ethnogeneses occurs on the basis of D - I technologies.**

The history represents a human systems constantly mixing up and breaking up separateness. There is an intensive hashing a biogenetic material. Even wars with the purpose of a robbery come to an end with hashing of a genetic and cultural material. Besides they are continuation of D - I technologies, such, as intraspecific crossing, interspecific carry of genes by means of viruses.

At formation of empires there is an integration of people. As examples Roman empire can serve, Russian empire, etc. Integration often occurs between industrial firms, there are corporations, alliances. It is possible to approve safely, that all the ancient and modern states have resulted from integration of the isolated, conflicting tribes. Often in a role of a consolidator is the strongest sort acts. We shall result examples [51].

It is considered to be the most ancient civilization of the Near East the Shumer civilization which has arisen as a human concentrate in valleys of the rivers, the Tiger and the Efrat. The first settlements in this marshy region appeared 7 thousand years BC. From 6 to 2 thousand of years BC swamps had been transformed into gardens, large cities, writing, a wheel, irrigational constructions - water transport arteries, huge cult constructions were created. The first states had arisen at the beginning of the 3 thousand of years BC in the form of small cities - the states. For example, in Babylonia (2 thousand of years BC) communal both a state ownership on the ground and irrigational constructions existed. The imperial authority was limited to clergy and rich cities. On places bodies of communal self-management were kept. Laws of Hammurapi aspired to protect debtors from debt slavery, tsar was appointed the god that «strong did not oppress weak». It is necessary to pay attention to the "soft" form of the despotism, aspiring to not aggravate attitudes between various layers of a society. It is possible to assume, that already basic principles of democracy were incorporated there.

The Shumer civilization which Babilonians, Assirians and Persians had got, was turned into ashes by A.Makedonski invasion and later - by Romans, but before Shumer culture, science and policy had time to migrate waterways on the north of Africa to Egypt and coast of the Mediterranean sea. On change withering Shumer civilization the civilization of Egypt had come. It is supposed, that the dynasty of pharaons had gone from Shumer lords [187], and Phinikinians (modern Lebanon) were Noi descendants [187.] Phinikinians inherited skill of the ships construction from ancient Shumer and transferred it to other people (assimilation of culture). From 4 thousand of years to 2 thousand of years BC the Egyptian civilization effervesced a recession of a life cycle.

Ancient Egypt (3 thousand of years BC) shared into 40 noms, which competed for influence. Conflicts led to section of Egypt into the Top and the Bottom empires. As a result of an antagonism there was a merge into union Egypt (2.7 - 2.4 thousand of years BC) with the centralized authority. Donation by allotments of notable persons led to the strengthening of their influence, a distemper and repeated disintegration of the union state. This process repeated several times. There was an Average empire in 1600 BC. Then there was a New empire (1575 BC). In 7 century BC the Later empire

finished life cycle of Ancient Egypt. All this period struggle for authority between tsar and nomarchs with variable success was observed. There were palace revolutions, to alternating cycles of differentiation and integration of the state. People (phellachs) did not show revolutionary activity, and lords did not aspire to facilitate a phellachs life. Obviously, in Egypt the state had strongly left from orengy- tribe democracy. It is necessary to pay attention, that all reformations occured along a valley of Nile, obviously, under the main communications. The culture of Egypt strongly influenced on the culture of African peoples.

Ancient Greece. In the 2 century BC Greece represented a conglomerate of tribes which already were in a successive contact with Babylonia, Egypt, Phoenicia. It is possible to assume, that the rigid statehood of Egypt has not found reflection in orengy - tribe consciousness of Greeks, therefore they chose a way of Babylonia and in 9-8 centuries BC tribes were united in policies (cities - the states). From the 1 century BC cities intensively grew in Greece. Owing to the sea communications trade developed, colonization of Asia and Africa was carried out. Greeks reached the Crimean peninsula and the Caucasus. A.Makedonski soldiers made campaigns on cities of Central Asia, Persia, and further. Greece borrowed a science of Egypt and Asia, from Phinikinians they learned to build ships, a philosophical idea appeared. Ancient Greek cities - states operated by democracy or authoritative, within many centuries provided а development of civilization. Cities traded, specialized on a sort of activity, competed. High political activity of demos (people) showed strong resistance to aristocracy, especially in Athenes. Council of elders constantly operated, a post of bazilevs (tsar) was elective, national assemblies were kept.

In the process of expansion of the Athenian state patrimonial attitudes were replaced by territorial, archons (instead of bazilevs) were elected. The Athenian democracy was adapted for small cities - states. Large associations demanded other forms of board. Pressure of aristocracy came to the end by Pisistrat tyranny. In the 5 century BC policies united into Akhamenid empire which was broken up into two unions: Athenian and Peloponess (Sparta).

Further there were cyclic processes of disintegration, association, external and internal wars. In 4 century BC Alexander the Great created empire of Ellins states. Stochastism of isolated cities came to the end by Alexander the Great rigidly operated empire which was broken up in the 2 century BC and Greece appeared under the authority of Rome.

We again see alternation of integration - decomposition. The tendency to integration, strengthening of the central authority, replacement of related communications with social communications led to the inevitable disintegration of too vast conglomerate, by virtue of parts proportionality infringement. Democracy of small tribes and policies was not capable to operate larger states.

The authority leaned on riches, as generated constant aspiration of all power structures to increase the property. All empires conducted continuous wars. The central authority always leaned on the landed property.

Ancient Rome. In the 8 century BC three tribes coexisted in a valley of the river Tiber: Ramns, Titzis, Lutzers. The leader of a tribe was a tsar (rex). The center was the city of Rome. There were 300 families. Ten families formed curia. Political system - military democracy. Communal possession of the ground. Council of elders operated. Rex was elected.

In the 6 - 5 centuries BC the transition to the authority of the nobility (even if it of a plebeian origin) was carried out. Romans systematically won Italy.

The aristocratic republic, was replaced by dictatorships of Sulla and Caesar (the 1 century BC). Caesar became unlimited emperor in authority. Expansion on the south and on the north proceeded, Greece, craft, trade assimilated, the network of roads in the length of 300 thousands of km was constructed.

In 284 a mode of an absolute monarchy was established. Republican institutes appeared unable to operate an empire. National assemblies fell into decay. There was a regeneration of the senate. The huge territory demanded division of imperous powers (the 3 century). Then there was a division of the Roman empire into Western and East empires (395). The western empire was broken up under impacts of the European neighbours (barbarians) in 476 East part (Byzantium) existed 1000 more years, and then Europeans (crusaders) struck a crushing blow to it. In the 15 century it was finally destroyed by osman Turks, having time to pass on the baton of Greek and Ellin cultures to Slavs (christianity) and the medieval Europe.

Western Europe which was a part of the Roman empire, till the 5 centure represented a conglomerate of tribes (Gall - Romans, Francs, Westgots, Burgundians, etc.). After the 5 century the barbarous feudal Europe could not use long achievements of Rome by virtue of the cultural

immaturity. Europe "boiled" in wars. Chlodvig (485) created the state of Francs (6 - 9 centuries), representing a conglomerate of people connected by force. In 843 year there was a split on three basic parts, each of which by repeated combinations and reshuffles turned into France, Germany, Italy, etc.

While Europe was in feudal dissociation, Arabian East assimilated achievements of Rome. In the East in cities in the 9 - 12 centuries there were garbage wells, the water drain. Arabs created geometry, geography, trigonometry, astronomy, libraries, travelled to Iran, India, Central Asia, China, Ceylon. Stone bridges in China are known since the 8 century, and in Europe only the 12 century. It is not excluded, that social Shumer "genes" continued to live in the environment of arabs.

Cities in Europe appeared only about the 11 century, and strongly conceded to the Roman cities on comfort, cleanliness. Paris was a dirty city, only in the 14 century there were roadways, and the water drain – in the 14 - 15 centuries. Till the 11-12 centuries Europe slowly mastered world experience, not creating innovations. The Arabian and Byzantian cultures and science got into Europe through Italy and Spain. In the 11-12 centuries, having created sailing fleet without oars, superiority in navigation was grasped by Venice and Genoa (is closer to Rome and the East). In the 13 century superiority in shipbuilding was intercepted by Portugal. Portugueses, having rounded Africa, reached India by sea, Spaniards (Columbus) discovered America.

Crusades led to accumulation of riches in Europe. In the 12-13 centuries from the East to Europe samples of latin culture returned. In the 15 century Portugal, Spain and England begun colonizer expansionist policy. Cities began to grow, in them the capital, a labour concentrated, the science and technics developed. It is curious, that the first shops appeared not in Europe. Corporations of handicraftsmen appeared in India (the 7 - 12 centuries), then in Byzantium and Italy (the 9 - 10 centuries). This wave came to France by the 11 century. And only after that it got into England and Germany (the 12 - 13 century). Apparently, the industry to the Western Europe got from the South under the communications laid still by the Western Roman empire.

After numerous wars and repartitions now Europe has united into the union. Russia integrated numerous tribes. There was an empire. The Soviet Union became the successor of the empire broke up in 1991 into large formations. So, it is possible to sum up. Around of Mediterranean sea there was a whirlwind of successive relay race of civilizations and cultures. The line of development in 7 thousand years was stretched on a circuit: Shumer - Egypt, Phoenicia - Greece - Rome - Byzantium - the Arabian world - Spain (Italy) - Europe - the USA. The new leader arose after the stagnation of the previous leader. Repeated revival was not observed. But thus there was a successive transfer of culture from the neighbour to the neighbour on water channels (the rivers, the sea). The Mediterranean sea served as an attract. Around of an axis of leaders occured drffusion dispersion of the cultural information generating the numerous states and ethnoses, there were continuous wars. Wars carried out hashing bio-and sociogens.

In Asia on the coast of the Pacific and the Indian oceans an alternative whirlwind of cultures (Hunns, Chineses, Mongols,Japanese, Hindus, etc.) stormed.

Ancient India (2 - 0,5 century BC). The class state was formed of various tribes in the form of a monarchy under direction of rajah. The maximum posts were taken by the nobility. During Maury epoch (4 - 3 century BC) in the union state all Hindustan was united. In the second century India broke up into parts.

China. In the 18 century BC from tribes there was a dynasty Shang with absolute authority of tsar (van). Influence of the nobility was defined by riches and related communications with the tsar. In the 12 century BC the state fell under pressure of the neighbour tribes. New empire Chzhou arose in 1122 BC. Tsars inherited authority. In the 9 century BC the state broke up as a result of people uprising. The country broke up into set of the states leading war among each other. In the 3 century BC Tsin empire won and united all into Tsin empire. In 209 year BC Chan dynasty as a result of revolts came to authority, which was broken in 220 under impacts of insurgents. In the 3 century Gunns grasped Northern China and assimilated in it. Processes of association of the North and the South (dynasty Tan). Further dynasty Sun (10 century) followed. After capture by Mongols and clearing the Chinese empire had existed till 17 century.

Attempts to colonize China by Englishmen began. The period of assimilation of technical and political achievements of the West came. Defeat in the Japanese war weakened unity of China (the end of the 19 century). After a wave of revolutions the monarchy had been overthrown (1911). The republican period assimilated experience of the Soviet Union and the western civilization came.

The Mediterranean and the Pacific attractors poorly cooperated among because of range, therefore their development went by various ways. «The silk way», connecting two attractors arose and collapsed. First time the "way" arose at the closing stage of existence of Roman empire (the 2 century BC for the 2 century of our time). Second time it arose during Islamic gains (the 6 - 8 century of our time). The third - during blossoming the Mongolian empire (12 - 14 centuries). With development of the European colonialism alternative ocean ways which planned integration of East and Western civilizations were mastered.

So, ways of address communications were defined by geographical factors. Communications provided streams of culture, science, goods. The principle of a dominoe worked, an interaction extended from the neighbour to the neighbour. Each region created conditions for development on the basis of the opportunities, but with use of the information borrowed from previous civilizations.

Wars, trade, culture are mechanisms of integration of societies. Each new culture and economy is a new combination of former evolutionary numbers. Combinations so various what to reveal separate laws it is inconvenient, therefore on fig. 6.4.1 the most generalized tendencies of these processes are represented.



Fig. 6.4.1. Dynamics social D - I processes. 1. The life cycle of the predecessor state. 2. The life cycle of the follower state. 3. The trend of integration processes.

All historical events can be classified as the chain processes going by a principle of a dominoe. Biological analogue of such processes is suct ession (go-ahead coordination). The predecessor prepares conditions for

occurrence and developments of the follower. From the past the wind of evolution "blows". From the last substratum is born "new".

The "whirlwind" of civilizations, states, cultures rotated around the geographical attractor in the area of the Mediterranean sea. The direction of relay race was defined by presence of channels of communications (water, after overland) and readiness to accept relay race (a maturity of a civilization). Barbarous Europe could not borrow the Roman culture, therefore the wave of development went to the East. Only one thousand years later it returned to Europe, inrich with Minor Asia culture.

Processes D - I in becoming states have a number of laws. On a background of fluctuations D – I the general trend of integration is observed, the sizes of social associations increase. Numerous tribes merged in large formations. The subsequent disintegration occured on the large parts essentially exceeding the primary breeding unions. The quantity of small societies constantly decreases. Dynamics of process D - I societies is invarianted to models of "weaving of a rope » fig. 4.4.3.

So, the differentiation (separatism), alternates with integration (convergence, ingression). As D - I mechanisms are invariants and so in the future separatism and integration will accompany with the development of mankind, but with smaller amplitude.

All D - I processes are the consequence of strong-willed decisions of leaders, therefore their reasons are hidden in depths of human mentality. In chapter 7 we shall try to understand motives of human activity.

Let's consider D - I processes in human culture which components are religion, formation, science, policy, right, art.

In a basis of all religions of the World the mythological, pralogical thinking lays. Inability to explain everything and get into an essence of the phenomena was compensated by models of a mysterious deity.

All pagan religions have undergone set of bifrucation. From a pagan enclave in area of the Near East a monotheist branch of Judaism (15 century BC) was separated which proceeds till our time. Judea created a system of representations about an origin of the person and developed norms of a hostel (the Old Precept), partially borrowed from pagan beliefs [187]. In the 1 century of our time from Judaism the branch of the

Christianity which used dogmas of the Old Precept and added with their New testament (Bible) was separated.

By this time the Roman domination levelled languages, and all population of the Mediterranean has merged in uniform politheist ethnos [59, 60]. But in the 1 century of our time in Roman empire together with the slaves delivered from the Arabian East, there were Christians (mutation), who strongly differed on character of behaviour, they aspired to afterlife. On the basis of the early Christian community in the 5 century there was an ethnos named «romei». The mutation has developed in Christian religion, and Roman empire became Christian. Under influence of Byzantium (east part of the Roman empire) from the 5 for 10 centuries Serbs, Hungarians, Russian, Alans turned into Orthodoxy. The Christianity became one of leading religions of the world, captured Old and New Light and extended together with colonialism in Asian-Pacific region. But also the Christianity has undergone a number of mutations, branchings. There were Catholics, Protestants, lutherans, Calvinists, Orthodox, Old Believers, etc.

In the 7 century of our time in the Arabian East there was a new mutation - world religion Islam. Roots of Islam leave in the depth of pagan beliefs of the East. In the 7 century Mohammed formed a group of fanatical, brave followers. The Islam became the way of introduction of uniformity in religion. On the basis of Islam there was an Arabian ethnos which has involved different people (integration). Islam also has not avoided bifrucations on sunnits and sheets.

It is possible to consider, that Christianity and Islam have the common roots that proves to be true similarity of some dogmas. All monotheistic religions exist till our time. The polytheism (pagan) was kept only in social memory of people and some ceremonies (for example, a pancake week in Russia).

In other parts of the world from pagan beliefs Hinduism appeared, later branched on the Buddhism and Djaihnism, which distances in turn some more branchings. With the advent of the developed communications and migratory processes all world religions began to influence on each other.

The example from the area of religion confirms a display D - I technologies in the social phenomena. New religions integrate social memory of the predecessors. The plural, shattered representations of pagans, are unified in monotneistic religions, bifrucations which processes

of integration poorly compensate. All these invariants can be seen in lifeless and wildlife (see model of " weaving of a rope » on fig. 4.4.2). The religion is considered to the most conservative elements of culture and strongly divides people. P.Sorokin allocated with A.Tojnbi allocated religious attributes of civilizations as the main things.

Development of education went on a line of integration, generalization of knowledge. Each new generation should acquire the knowledge extracted by ancestors. The volume of information progressively grows, in order to transfer it to descendants it is necessary to resort of generalizations, to pass from set of the empirical facts to studying laws. Unsystematic knowledge of alchemists was integrated into laws of chemistry. The doctrine about light merged with electromagnetism (Maxwell). On this background there are new scientific disciplines: cybernetics, genetics, nuclear physics, physics of vacuum and so forth. The Present monography also is aimed on creation of system knowledge system.

Writing appeared in Shumer (the 3 century BC), then it was passed to Babilonians, Assyrians, inhabitants of Urartu, Phinikinians. Phinikinians created althebetic - sound writing (11-10 centuries BC).

Distribution of alphabetic writing occured the branched out channels (writing philogenes), presented on fig.6.4.2 [46, 47].

All variants of writing proceed from a hieroglyph (the art - figurative form of information display), then transition to the alphabetic form which is more abstract is observed. Combinations of letters allow to receive infinite quantity of combinations. Only some of them become words symbols of concepts, structures. Tens of letters, tens thousand of words, incalculable quantity of phrases and texts. For comparison we shall recollect, how from atoms there are molecules, from combinations of molecules - substance. The word is the connected system of a root, a termination, a suffix, a prefix. At evolution the root changes more slowly then others. Words in phrases cooperate by a certain order. In different languages a degree of rigidity of interaction is different (compare German and Russian).





Fig.6.4.2. «Philogenes» of the alphabetic letter.

The scheme 6.4.2 shows, how the word by its slow changes in time and space is transformed at interaction with other language groups. Prepotent languages periodically appear and alternate. In A.Makedonsky empire the Greek language dominated. In the Roman empire - Latin. Then in Europe the French language prevailed. It is possible to show, how presently there is an integration of world languages, merge, hybridization, thus total of operating languages decreases. It is supposed, that in the future prepotent languages will remain: Chinese, Russian, Arabian, English.

"Curtailing" of the language information is illustrated by a birth of abbreviations, for example, the USA, Komsomol, the USSR. Similarly there is an evolution of ethnoses (Gumilev), chemical compounds, cultures, scientific and technical systems.

Let's consider examples D - I processes in the sphere of science. The ancient isolated knowledge, mythological thinking were integrated into philosophical representations (Greece, Rome). The cholistic science of Ancient Greece in Middle Ages was broken up to set of almost isolated disciplines (physicist, chemistry, biology, etc.). In the 20 century integration of different sciences (cholism) is observed. The postnonclassical science started to collect «the scattered stones». The technics and science are the least conservative making culture, therefore scientifically - technical achievements are easily transferred in relay race of civilizations and assimilate all cultures.

The modern science integrates all human knowledge, i.e. is a continuous evolutionary row. Roman empire was broken up, but Latin remains a language of science. We use the Arabian and Roman figures. The principle of jet draft opened by Alexandria Heron, in 2000 years was realized in the steam turbine. Empidokl (the 5 century BC) anticipated an idea of a natural selection (a survival of the most adapted organisms). Demokrit "had thought up" atom. Aristarch Samossky (300 BC) 2000 years before Galilee approved, that the Earth rotates around the Sun. The mankind tries to keep the scientific information extracted by different generations of people. Similarly, genetic information collects in DNA. The unnecessary information is deposited in recessive genes, but it is not lost. The social genetics of mankind uses the same algorithms, as biogenetics of animals.

The political system of a society similarly changed on D - I technologies. Ideas of democracy developed on a line: family - tribe democracy - Babylonia - Athenes - Rome - Europe. This mutation of society was an antithesis to biological authoritarianism (the inheritance of biosphere). Having existed some years, democracy of Greece and Rome was replaced by dictatorships of Y.Ceasar and A.Makedonsky. Blossoming and disintegration of empire did not destroy an idea of democracy. On splinters of Roman empire it was revived almost 2000 years later in England (1646), France (1789), Germany (1918). Transitions to democracy are preceded with "oscillatory" process between democracy and authoritarianism.

In connection with told it is possible to consider an idea of communism, as not got accustomed mutation of society. This idea starts from family - tribe attitudes. It found a refuge in Christian morals, and in the 18 century was designated in the form of Utopias (Sen - Simon, Furye, Ouen). Then an attempt of actualization of this idea in the form of the Commune of Paris (1769) and the long period of existence in the USSR (1918-1991) have followed. The Soviet Union reached greater heights in education (6 scientists on 1000 person) [202].

It is not excluded, that overpopulation, exhaustion of resources will compel to pass to a mode of self-restriction in consumption. Then the idea of a commune can be materialized again. We already know, that information seldom disappears completely, it only is deposited. Totalitarianism, fascism continue to wander as "phantoms" not only across Europe, but also worldwide. When there is a need rigidly to resist to an impact of enemies, authoritarianism can revive. Any forms of authoritarianism limit a variety of opinions, but consolidate a society in struggle for a survival as the program of behaviour of many societies of mammals [69]. Authoritarianism promoted consolidation of the states, enabled to resist to attacks of neighbours. It is tested, it is habitual. Therefore, when in crisis situations there is a problem of a choice of a way of a survival, there is no clearness, there is a temptation to return to already passed way, for example, to authoritarianism. Example, as the most democratic country considering the policy of the USA can serve in the World, but spreading democracy in other countries compulsorily by means of force and economic measures. Thus democracy only the American sample admits.

Other example of a heredity and integration can be the Roman right [167, 51]. After disintegration of empire the right has been adapted for conditions of England, France, Germany. Moreover, a church adapted a significant part of the Roman right for regulation of own affairs. In the legislation of many modern European states the base makes the Roman right.

In culture it is possible to see cyclic processes. For example, in poetry there is a change of styles of romanticism and classicism, in music there is an alternation of tendencies synthetic and analytical. In architecture the luxury is replaced by severity [62].

As in the lifeless nature, **energy for creation of new society is scooped from a substratum, from the broken structures**. The enterprise the bankrupt becomes a resource (is on sale) for others. The won state feeds conquerors. Disappearance of hydrogen («burning out») on the Sun gives energy for formation of heavy atoms and light for synthesis of alive substance on the Earth. Disappeared civilizations transferred the followers of knowledge, culture, technogenic environment. Descendants use knowledge of the ancestors. Capitalism concentrated resources on ruin of peasants, operation of colonial work, a robbery of other people (war). The ruined peasants and colonies created a resource for capitalism.

Technogenic ERs, resulted in chapter 6.3, are consequence of D - I technologies, thus are generation of human consciousness. Therefore it is possible to approve, that acts of people are determined by laws of synergetrics.

Apparently, the conclusion is proved (ch. 5), that every ER begins from the individual phenomenon and branches during the life cycle. Branchings are accompanied by integration, combinations. Not any combination forms viable system. That the system has appeared viable, performance of some conditions is necessary: maintenance of sufficient working capacity of the basic parts; necessary "conductivity" of communications, the coordination of rhythmics of parts [12], observance of the law of proportionality [30], sufficiency of resources.

Invariancy of D - I processes in all without exception stages of evolutionary development of the Universe (including rational actions of mankind) requires a special explanation to which chapter 7 is devoted.

Conclusions.

1. The Social genetics of mankind uses the same algorithms, as biogenetics of animals.

2. Geographical factors defined ways of address communications. Each region created conditions for development on the basis of the opportunities, but with use of information borrowed from previous civilizations.

3. Energy for creation of new society is scooped from a substratum, from the broken structures.

4. Ethnogenes occurs on the basis of D - I technologies. On a background of D – I fluctuations the general trend of integration is observed, the sizes of social associations increase.

5. Evolution of a society represents process of «a weaving rope» from numerous evolutionary rows: ethnic, cultural, technical economic, political.

6. As D - I mechanisms are invariants so as in the future separatism and integration will accompany with development of mankind, but with smaller amplitude.

7. For viability performance of some conditions it is necessary: maintenance of sufficient working capacity of the basic parts necessary for "conductivity" of communications, the coordination of rhythmics of parts [12], observance of the law of proportionality [30], sufficiency of resources.

6.5. Controling and self-organizing in societies.

In chapter 3.4 the analysis of a phenomenon of control in the nature is lead, various variants of administrative processes are allocated. We shall furnish proofs of invariancy of these processes on examples of a human society development. The person is an essence social, therefore all IAO are operated systems. In block "C" (collective) hierarchy of authority exists because in human societies coordination without authority is impossible. Such control is classified in chapter 3.4 as persystent. We shall lead the system analysis of the concept "authority".

It is possible to influence on the open system only through inputs and outputs. If to block inputs and outputs it can lead to "suffocation" (destruction) of a system after an exhaustion of internal stocks. To avoid troubles it is possible actions on maintenance with resources. If resources act from other system last has authority above the first and can operate its behaviour reflectively [72]. Reflective control is a synonym of synergetic coordination (see chapter 3.4).

The authority is supported by an opportunity to distribute resources. Therefore the main motive of behaviour of people, leaders is struggle for possession of a resource, struggle for authority. Reflective control exists in all biosphere. It is possible to operate behaviour of a colony of bacteria, depriving with their food. Thus the colony makes actions directed on self-preservation. In chapter 3.4 the example of behaviour of the amoebas, confirming told was resulted.

The managing director should manipulate the most important and irreplaceable for IAO resource. For mankind such resource became money. "Delicate" control can be carried out, "playing" combinations of resources.

On ancient stages of society development the main resource was the ground (biolocus). It is possible to add processes in development of the states and civilizations resulted D-I in ch.6.3 with generalization, that struggle occured between the state, aristocracy and people for increase in allotments. Disintegration and integration of the state formations were consequence of struggle for authority, for property. Disintegration occured, when the social pressure exceeded some limit. The aspiration to authority through possession the property is an attractor of behaviour in societies of people. Aristocracy, feudal lords, monarches and others authority, manipulating «a whip and gingerbrea », took a tribute from people. Between imperial authority and its deputies there was a struggle for distribution of a tribute. The further the society left from breeding democracy, the more resources concentrated in power structures.

All history of mankind rotates around the struggle for the property (resources), struggle for influence (authority). These are the main political grounds. Partial concessions to the competitors pursue the purpose to keep the most part. Strategy of concessions is peculiar to the Western civilization (Hammurapy laws, Solon and Klisfen reforms, the Roman right). The Chinese policy why - that preferred to lead up business to revolutionary explosions. We shall try to explain this phenomenon from positions of synergetrics.

Each person as the social essence, can be the egoist and the altruist. Egoism is directed on self-preservation of an organism, altruism is directed on preservation of a tribe for the tribe also is the mechanism of protection of an individual. Both programs of behaviour are realized in different conditions. Family - tribe social connections are perceived as «our», and longer communications with next IAO - as "another's". From "another's" it is necessary to protect the biolocus, and it is possible "to hunt" for an another's biolocus. Such programs of behaviour are precisely traced, for example, at gregarious primates [69].

A person is a social essence and since a birth cooperates with members of "flight". Within the limits of flight on internal communications biogenes, sociogens (experience), resources (food, instruments) extend. The flight maintains a biolocus and is enough a simple IAO. Coordination is carried out by the leader. Distribution of a resource between members of flight never was equal. The social inequality meets in flights of different animals, in particular, at primates [69]. The gregarious way of life demands coexistence of individuals on the limited site of territory (high population density), hence, communication between members of society short, visual, verbal. Each individual has genetic aspiration to the property, to struggle for resources, aspiration to expansion of own genes [69]. In primitive flight the feeling of dependence on flight was strong, altruistic tendencies dominated.

In process of increase in number of society resources of a native biolocus were exhausted. From IAO the groups leaving on other territories (change of biolocs) were separated. Expantion of mankind is not unique. «A person similarly to any kind aspired to master the greater space with probably big density of settling» [6, 39]. Development of the next biolocs is more preferable, since do not demand long communications (more economically). Only the need or adventurism can force to migrate on greater distances. Primitive expansion reminded diffusion since ways of migration got out a trial and error method more. Communications between neighbours are always longer. than between relatives. Long communications "weaker", the feeling of likeness was lost, and the mankind was gradually differentiated on «our» and "another's".
40 thousand years ago the mankind has extended on all planet, using natural liaison channels (the rivers, the seas). Means of transportation are described above. Settled densely, protected the territory, led war, capture of slaves transformed into similarity of hunting. Each person has an instinct of the hunter.

Human expansion led to settling of all suitable territories. The subsequent growth of number raised density of settling of enclaves, promoted restoration of "short" system communications, strengthening of a competition for distribution of resources between IAO. Concentration of SEI in separate IAO generated expansion of leaders, the social inequality in the rights, in consumption increased, the authority amplified. Concentration of resources generated authority, and the authority promoted continuation of accumulation. The riches allowed to take in the lead positions in power structures. So the right of strong was created.

All ancient family - tribe attitudes were with elements of democracy (relatives love more). In small communities and in small cities - the states the close neighbourhood is felt as «our». Shumer and Babylonia represented community of small communities, therefore altruistic tendencies were more brightly expressed there, fixed in laws (social genes). It is known, that all alive prefers to develop that already has, therefore, casually having arisen, the theme of democracy constantly "sounded" and amplified in the Western civilization.

In Shumer clever and skilled officials were appreciated. Service nobility superseded patrimonial [51]. The state could construct a network of irrigation canals. In an antique civilization long there were rudiments of a family – tribe democracy that served as the reason of pluralism of ideas in a science and culture. The pluralism, freedom of an idea of an ancient art explains rise of an engineering and philosophical idea on early stages of development, but on a stage of stagnation (monarchy) of representatives of formation and a science considered as superfluous people, appreciated masters of amusing affairs [85] more. It, in particular, has served one of the reasons of disintegration of Roman empire.

At growth of societies attempts to adapt democracy to new structures of authority were undertaken. At the Roman republic always there was a constraining system, aspiration to reasonable distribution of authority between people and aristocracy. However the tendency of movement to dictatorship and a monarchy prevailed [51]. Integration of the sizes of societies postponed people from each other, hence, communications weakened. The feeling «our» developed into feeling "another's", and egoism started to dominate. Confidants of tsar entered into a command of "ours", therefore it gave paramount privileges. The people has defended further, therefore it had to win political activity the rights.

Related attitudes weaken at integration of different populations. Gumilov marks, that many ethnoses broke up because of inflow of "another's" [59, 60]. Process of integration of mankind in the state formations, reduced an acuteness of an antagonism inside of the state, but there was an antagonism between the states, often passing in war. War is the most ancient means of struggle for biolocs, for operation "another's" IAO (for 6 thousand years has occured 14,5 thousand wars) [83].

Concentration of the central authority was accompanied by concentration of riches at power structures. Other states were estimated either as enemies, or as the purposes for a robbery. The won slaves at all were not considered as people, but only as alive property, tools of work (blocks M and P). Spaniards did not consider American Indians as people and ruthlessly exterminated them. Cruelty in relation to another's repeatedly met in history, and for «ours» it was possible also to give a life. The dualism of mankind in which basis genetic programs of behaviour lay is so.

If in the West (Babylonia, Greece, Rome) took place representation of people in power structures in the East there were no cities - the states with bright feeling of relationship, therefore has prevailed a line of egoism of regal structures. In the East steady tendencies to display of the rigid centralized authority were showed, not aspiring to lower social intensity reforms. The line of a competition for authority passed between tsar and aristocrats. People never had imperous powers.

Authoritarianism represents genetically inherited social attitudes. Pseudo-authoritative attitudes in flights of monkeys [69, 70] are known. For democracy pseudo-related attitudes which have not found a reinforcement in greater authoritative states of China are necessary. Pressure were resolved by crises of revolutions and wars. Imperous dynasties were periodically replaced, that it is possible to classify as cyclic coordination.

Absence of variations of a free idea braked development. For this reason the East developed more slowly, than the West. Expansion technogenic, western civilizations (colonialism) in the 19 century has

attached east states to an industrial way, opened prospect for convergences (integration).

Let's discuss democratic aspirations of Europe in the 19 century, almost in 1000years after disintegration of Roman empire. In the feudal Europe there were cities - the centers of concentration of the population (IAO of CMP type), not adhered to a biolocus.

European cities arose about monasteries, on crossroads of roads. About sacred places fairs, trading numbers (there it was more safe) were arranged. In the beginning there were rural settlements, cities, then megacities. European cities rendered armed resistance to attempts of feudal lords to return them in the bosom. Cities collected the population not to related attributes, value of social, labour, communal communications therefore amplified. Cities concentrated riches, knowledge, manufacture, cultural values, labour, transport units. High population density of cities created a dense network of communications (science, culture, policy, religion, technics). Connections and communications in cities were shorter, labour activity communal (shops, manufactories, factories), demanding collective, altruistic programs of behaviour. Ideas of democracy were stored in social memory of the European person, and the aspiration to authority never disappeared from genetic memory of all mankind, therefore under favorable circumstances democratic tendencies have revived.

All history of mankind represents variations on a theme of struggle for resources [51]. In the basic principles of democracy the aspiration to equality does not lay, but the aspiration to select authority at an aristocratic top lays. Division of authority is consequence of impossibility to take away all. The European tradition of concessions to requirements of plebs (if these requirements are supported by real force) has led to partial concessions of imperous powers to people. In the USSR it had managed to realize dictatorship of proletariat. China successfully carries out construction of socialism.

Capitalism also has arisen in cities, as a result of concentration (accumulation) of the capital, proletariat, scientific and technical potential, communications.

It is primitive - the communal collectivism still B.C. was replaced by the centralized personal authority of leaders of different names with the elective or inherited property right to the ground and irrigational constructions. In modern Europe this process with variable success develops in a direction of strengthening of the collective property, electivity of presidents, parliamentarism. Occurrence of joint-stock companies (the collective property) weakens an acuteness of struggle for repartition of the property. Having begun with military democracy, having passed through peak of tsarism and dictatorship of proletariat, public processes slowly with fluctuations come nearer to democracy.

However harmonious distribution of authority of the general has no anything with equality of the property. For realization of expensive space, ecological, transport projects concentration of the capital is necessary.

Capital in regular intervals distributed among the population cannot provide the decision of scale projects. For example, concentration of resources of many states is necessary for protection of all mankind against space accidents (collision with a large asteroid). For the decision of environmental problems concentration of the capital and resources is required from the state, at the private large enterprises, in banks. Sharing the enterprises is a way of concentration of the capital. The effect of concentration of resources meets not only in a society, but also in any natural organizations (chapter 4.2).

It is important to notice, that the resulted examples reflect the effect of SEI concentration generating accelerated development, is frequent with an aggravation. The probability of short circuit of contours of positive feedback increases, appear highly effective CMP contours of management. In the 20 century this process proceeds with an aggravation since more than half of population of the Earth concentrates in cities.

However according to logic of LC increase of urban population should stop in the 21 century. The reason of a stop will be a raising discomfort of a life in an overdestened variant, recession of birth rate, decrease of population. It is possible to expect, that after integration into megacities, return process of decomposition of cities up to optimum number of 100 thousand people [64] will go. Evolution is shown in alternation of D - I, but the aspiration to harmony is shown in decrease in amplitude of fluctuations. On early LC stages of fluctuation more intensive, then there was an attenuation. On stages of stagnation the fluctuation can increase.

On fig. 3.4.2 it is schematically shown, that in biosphere simultaneously exist in the certain proportions persistents (a cell, an organism) and stochastic (flight, biotsenos) control systems. In a society the similar picture is observed.

All IAO exist owing to the persistent operating center (pharaon, tsar, emperor, monarch, president, etc.). Between the states interaction has stochastic character. Even greater stochastism, almost the chaos, is observed in interactions of civilizations. Attitudes develop on principles of self-organizing.

Every firm has persistent managing director and subordinates with the rights and duties. Interaction between competitors in market attitudes stochastic, with the tendency to decrease stochastism as in biosphere. Market attitudes start to be adjusted by the state [123].

The technosphere without the constant control over the person is not capable yet to self-development. The behaviour of technical systems is set by the person. By virtue of it elements of a technosphere do not possess surplus of behavior programs, but natural, biological objects during evolution have got set of ways of behaviour and set of functions. Therefore management of biological objects consists not in giving of demanded properties by it, but in restriction of superfluous degrees of freedom. The morals, religion, traditions, customs, laws, right, etc., are terminators of behaviour and do the person by more predicted. During long education by the person social programs of behaviour are got and some genetic behavioural rudiments are blocked. Controlling should change thus a material and information inhabitancy of the person to provoke the adaptive form of behaviour.

So, there is a law of controllability loss at removal from the operating center in spite of the fact that the tendency to influence not only on the internal environment of the organization is observed, but also on an environment.

6.6. Invariants of social communications development.

In chapter 4.2 the basic laws of change of character of system communications during development of a material world which are reduced to following laws have been established. Communications become long, branched out, purposeful, leading for SEI streams. The probability of occurrence of positive feedback increases. We shall show, that development of a society was accompanied by similar tendencies.

Obviously, family - tribe attitudes are provided with short, reliable communications between people. Integration of people into large, social

formations inevitably led to lengthening of communications, decrease in their reliability that demanded change of structure of a control system. For this reason democracy was replaced by authoritarianism, the pyramid of authority grew. Damage of a long liaison channel more possibly, than the short one, that leads to decrease in reliability of a control system. Damage occurs in «a weak part» more often. The organism dies at refusal of any important organ. Economic crisises happen because of inconsistency of manufacture and consumption. Failures of technical systems often occur because of failure only of «one screw».

strengthening Social development always demanded of bridges, channels, were communications, roads, tunnels under construction. Communications became address, more high-speed (see chapter 6.3). Infringement of conductivity of communications (blood clots) destroys system. When development of communications lagged behind growth of the territory, many empires broke up. So, disintegration of Roman empire has been predetermined by a disproportion between the sizes of territory (from modern England up to Asia) and an inefficiency of communications (despite of intensive construction of roads). The hitlerite Reich was stretched in immense territories of Europe and Russia that served one of factors of defeat. The similar mistake was made by Napoleon Bonaparte. The international corporations have arisen only owing to new information and transport systems. We shall consider value of communications (connections) in becoming civilizations.

Ancient civilizations have developed owing to natural (water) communications. Above (ch. 6.3) considered two attractors in pools of the Mediterranean sea and the coast of the Pacific ocean.

Dynamics of capitalism development in Europe was defined by geopolitics, possession communications. **The first on a way of capitalism Holland (the 16 century) has entered.** It is the country of cities and manufactories, the world center of trade (crossing of communications). Holland owned 60 % of world fleet and widely used sea communications. Owing to marshland feudal lords did not grasp the ground of Holland. There was not Feudalism, the population kept family - tribe democracy for a long time. Construction of dams and drainage of bogs demanded collective actions. Besides, half of population lived in cities, «mutagen zones». Capitalism has arisen in cities [107]. Absence of own sources of raw material stimulated transition of the another's goods and import of raw material. When England has blocked inflow of resources, leadership of Holland has been lost.

In England there was a concentration of the capital inside of the country (high duties on import of the goods), the English bank (the commercial and industrial credit allowed to begin business to many businessmen) was created. In England the steam machine has raised productivity of a weaving loom (concentration of efforts). Presence of own resources of coal and ore salutarily influenced. Communications (railways) developed. The goods from colonies and other countries could be brought to England, in a counterbalance of Holland, only on English ships. England contained 60 % of a world merchant marine fleet in the 19 century, by the military way intercepted the initiative from Spain, having deprived its domination on the sea. Englishmen have opened a way to Russia through the White sea.

In the middle of the 19 century England came out into world leaders. The robbery of own and colonial people allowed to concentrate the huge capital for industrial revolution. So, England used tactics of SEI concentration and expansions of a network of communications for capture of leadership in economy.

Germany, did not have outputs to the southern seas and was cut off by conquerors from the northern seas. Not having colonies, the country accumulated the capital due to a robbery of own peasantry. Feudal lords turned to rural capitalists. Cities kept medieval character. The town man was the homebody, there was no municipal transportation, work was conducted in the own house.

Industrial revolution began from 1830-1860. Accumulation of the capital went by ruin of peasantry and its transformation into hired workers. Railways were under construction the state and compensated absence of water highways. Factories were equipped with the newest technics while England continued to maintain the old equipment. Germany was the third country which won leadership in Europe in the 19 century. But then defeat in the first world war followed.

France in the 19 century reached successes in the sphere of the financial capital, and became the world banker, the world usurer. Not looking at change of leadership, all Europe since the 17 century increased a consumption level due to operation of colonies and technical revolution. However the colonialism and the communications connected with it in turn initiated development of capitalism in America, Asia, Japan.

America discovering involved Europeans into New World by the sea. Development of the American capitalism in the 20 century led to a gain the world superiority in economy by America. European science and culture generated the new nation on the American continent to which the African culture (Negros) is added. Negros delivered to America by the sea. In the 18 century the length of transport communications became commensurable with the length of equator.

In the 20 century owing to development of communications there was an integration of Europe into uniform, economic space. After centuries of enmity, the differentiation is replaced by integration. Under the developed communications industrial revolution extends to Asia and the near East. Process of globalization develops. So, without development of communications and concentration of resources, including labour, capitalism could not take place.

Let's consider value of selectivity of liaison channels in becoming civilizations. It has been above shown, that «suctzession» of civilizations was not casual. Shumer civilization, was surrounded by set of tribes and people, its culture could "spread" diffusion in the different parties, but there was a selective way: Egypt, Phoenicia, Greece, Rome, etc. it is obvious, not only presence of a waterway defined a direction of relay race. We shall consider this process from GTSC positions (ch. 4).

In ch. 4.2 we discussed, that the liaison channel necessarily should include the transmitter and receiver of SEI stream. Absence of any element breaks the communication. The signal from an output of the transmitter can be useless dissipated in space if there is no receiver of this information. Alive organisms have various means of SEI transfer. The Humoral system addresses signals to all. The nervous system is a purposeful liaison channel.

"Streams" of culture searched for the addressee, capable to assimilate them. If some culture simulates in social space various SE streams, so acceptors can only selectively receive what they need. Not all elements of culture pass through a liaison channel equally (filtration). Technogenic elements are willingly accepted (weapon, tools, subjects of a life), religious beliefs, customs are most difficulty transferred. "Passableness" of art has an average position. The European culture is perceived in the Mediterranean and the Black Sea pools since these regions have the general roots. The Far East culture (China, Japan, etc.) is more remote from European.

If the society is not ready to adapt an innovation in connection with psychological inertia, or as a result of absence of needs relay race does not take place, or can be postponed for uncertain time. For example, the person who for the first time has appeared in streets of city with an umbrella, the crowd thrown stones. The genetics of Mendel almost for hundred years has been fororgotten before repeated "opening". Revolutionary ideas of the Parisian commune also have been postponed "poste restante". Egypt assimilated Shumer engineering ideas (pyramids, ships), but has not acquired a family - tribe democracy. However Greece adapted both political, and technical ideas.

After Rome falling it was required to Europe 1000 years to come out into the world leaders in economy and science. What did prevent to neighbours, barbarians borrow culture of Rome? Vandals grasped cities in territory of the Roman empire, completely destroyed them, and almost took away nothing to them [60]. They simply destroyed alien culture and were not ready to assimilate it. All alien is always perceived aggressively. Natives did not perceive the European values, they willingly exchanged gold and furs for glass knickknacks. For the same reason barbarians could not use achievement of Roman empire. They simply were not necessary to them during this period. Only in 1000 years after all these events the accelerated development of the European region has begun, and then its bifurcation followed to America. From the 16 century in Europe bright scientific names began to appear. They are Kopernik (the 16 century), Kepler, Галилей (the 17 century), Descartes, Kant, Laplas, Lamark (the 18 century), Darwin, Mayer, Mendel (the 19 century), Reserford, Planck, Einstein, Bor (the beginning of the 20 century), Shredinger, Dirak, Fermi (the middle of the 20 century).

Diffusion of culture can be compared with a movement of the water stream on a rough surface. Water fills poles on the way, is poured through their edge, changes direction aside the least resistance, branches, bypasses obstacles. On such model the culture of civilizations was turned around the Mediterranean sea. Typical process of self-organizing was observed.

Why did not cities of Asia with the million population generate capitalism? It is possible to assume, that for an innovation the necessary combination of mentality, culture, religion, science and technics is required. The certain concentration of all factors, including power, resource, exceeding a threshold of "passivity" of system should be reached. After such excess of "threshold" of passivity positive feedback generate new structure. For example, the scientific environment gives rise to talents which back influence on the environment. As examples cultures of Ellins and the German of the18-19 centuries, where there were galaxies of talents can serve. If a scientist acted in the society, which has not ripened up to

understanding its discovery, the society did not support the scientist. So was with Mendel, Leonardo de Vinci, Bruno. A scientist who got in "resonance", became famous during lifetime. For example, I.Nyuton, E.Kant, Edison, N.Wiener, A.Einstein.

Comparative studying of laws of development of technical and biological systems has revealed a number of requirements to a new viable innovation. It is a principle of the coordinated rhythmics of subsystems, working capacity, conductivity of communications [12].

The ripened social environment "extended" those elements of culture as which considered necessary for itself from the former leader. The another's culture can be offered violently, but assimilates only voluntary. Conquerors often assimilate culture of people won by them.

In connection with evolution of system communications it is necessary to pay attention not only to quality of communications, but also on their quantity, concentration. Some redundancy of SEI resources is necessary for intensive development. For example, animals are intensively made multiple copies at a plentiful feed. For normal development of fabrics good inflow of blood is necessary. Crystals grow more quickly in the concentrated solutions of salts. The knife cuts owing to concentration of pressure on a sharp edge. Ischemic illness of heart is consequence of bad conductivity of vessels. Capitalism leans on individualism, egoism, but all these concepts of the basis assume of SEI concentration in hands of an individual. Leaders passionarity [59, 60] is a consequence of concentration of mental energy in some people. Sufficient concentration of energy is necessary for the development of genetic mutations (radiation, temperature).

If SEI concentration to consider as an attractor, all history of mankind can be presented as pulling of a rope between the monarch, aristocracy (bourgeoisie), people. Altruism assumes distribution of resources to all elements of system.

Social innovative processes also require SEI concentration. In conditions of the modern «the free market» the leader arises under condition of concentration of efforts and resources on a favourable direction. It leads to success not only in evolution of social systems, but also in technics (a knife blade, the laser, focusing of light and so forth), and in military science (phalanxes Macedonian, ram instruments, armour "wedge" of Prussian knights, a cumulative shell, and so forth). Sharp distance from competitors and progressive escalating of advantages leads to monopoly.

The states' history has set of examples of law action of the resources efforts concentration. Rome became empire owing to a favorable combination of conditions: to a gain of colonies (resources), concentration of authority, cheap force of slaves, development of transcontinental communications, navigation. Stagnation and disintegration appeared because of infringement of proportionality between needs for resources and their opportunity to satisfy.

Any activity of people is a consequence of display of mental processes, therefore without this component a social systems cannot develop. Coordination of complex systems is a process of concentration of efforts of mentality. Instead of stochastic search of ways of development the purposeful variant is realized. So, the invariant law of SEI concentration is shown.

Intensive development of capitalism in Europe is a consequence of work of the law of concentration. If the country managed to create intensive inflow of resources, concentration of the capital, labour, technical ideas put forward in leaders.

Conclusions.

1. Transfer of cultural values occurs from the neighbour to the neighbour under the developed communications.

1. The person similarly to any animal made expansion, but concentrated in settlements.

2. Social development is carried out through D - I technologies.

3. Cities are concentrators of science, technics, culture, economy.

4. For the development it is necessary a complimentary combination of various ers and achievement of necessary SEI concentration.

5. For economic leadership the optimum combination of capital, knowledge, technical achievements, the labour factor, passionarity is required.

6. Any activity of people is a consequence of display of mental processes, therefore without concentration of mentality social systems cannot develop.

6.7. Life cycles of social formations.

In chapter 5.4. the analysis of dynamics of development of complex systems is lead, the law of non-uniform development is deduced. «Any complex organism develops up to a known limit, then decline, an old age begins» [30]. We shall consider in more details display of this law in a human society.

Ethnoses, states, nations, elements of culture, firms, goods, beliefs, customs, ideas pass their life cycle. Evolutionary rows of technosvstems were resulted above (6.2). One technical innovations "died off" and others came on change.

Whydid not ever the "fulfilled" civilization come back to the leadership? Africa (an ancestral home of all mankind) is the most backward part of a planet. The age of this, the most ancient civilization not less than 100 thousand years. The mankind made expansion from Africa. Strong and active left in searches of the best destiny. Passive people stayed. May be there was a selection which was fixed in a genofund of the remained population? Why did people of ancient Shumer conced the leadership to Greeks and Romans? Why Germany which has followed the road of capitalism after Holland and England had overtaken them, and the last did not have enough forces to defend the leadership. Similar questions L.Gumilev set, studying ethnogenes.

The history totals over twenty superethnoses [59, 60]. Ethnoses are born 2-3 times in one thousand years and never repeat in one place. Unexpectedly in some society many passionar persons (active, aggressive, with powerful mental energy) appeared. The passionar command carried away behind itself people on expansion. Passionarians seldom left posterity, their number decreased, activity of ethnos faded. A rise lasted 300 years, a break - 150-200 years. Ethnogenes consists of the incubatory period, rise, acmatican phase of the highest activity, a phase of a break, an inertial phase, a phase of abscuration and homeostasis. LC of ethnos proceeds about 1200 years. Often on a place of disappeared ethnos the islands are left, rudiments (for example, Basques, Albanians, Caucasians, Iroces). The stagnant, simplified structures appear. In biosphere as a result of disappearance, any kind of alive essences, also persistent can remain (sharks, scorpions, mushrooms and so forth). In Ancient Egypt there was a mighty and various ethnos, Hamitic tribes with complex hierarchical structure (pharaons, their advisers, soldiers, priests, writers, dealers, farmers, poor, farm laborers, diplomats, builders). Military defeats from 11 till 5 centuries BC led to simplification of structure. From all social groups farmers - fellachs and the townspeople – copts were kept. Fellachs remained persistants during 2000 years. It will be coordinated with representations about acceleration of processes on a stage of growth and about their essential delay, and simplification on a stage of stagnation [101]. It is possible to add, that slowly developing structures (weakened, patients) break up all without exception. "Weak" also pass their LC, but their maximum essentially below. In Sumerian during thousands of years states arose and disappeared. However development of these states did not reach a level of Greece and Rome.

So, irreversibility of ethnogeneses processes is marked. Gumilov could not find the reason of this phenomenon on the Earth, therefore had compelled to address to the space.

The similar phenomenon can be observed also in biosphere. Origin of a life on the Earth has occured once. Huge reptiles died out, mammals came on change. Return to dinosaurs did not occure. Naked seeded plants were replaced by blossoming plants. Examples can be resulted infinitely. So, there is a law of originality of life cycles, but why? The Answer can be found in D - I technologies.

In a stage of stagnation the organization can desintegrate into parts. Parts cannot repeatedly be united in former structures. For this purpose there were obstacles (differently there would be no decomposition), the environment changed, there were new competitors. The culture of the left civilization should be integrated with elements of other cultures, but it occurs in other geographical regions.

As a whole the scheme of evolution can be presented as a sequence of life cycles of ERs (fig. 5.4.2). Alternation of acceleration and delay (as in music) is observed. It is integration - decomposition, rise - falling, self-organizing - coordination, lability - rigidity, universality - specialization, competitive struggle - alliances, egoism - altruism. The first words of dichotoms are concern to initial LC stages, and the second - to the finishing ones.

It is considered [84], that life cycles of social processes in mankind proceeded with acceleration: Neolit civilization proceeded 32 centuries, East-slaveholding - 22 centuries, Antique - 12 centuries, Early feudal - 7, up

to-industrial - 4.5, industrial - 1.3, information - 0,5. «History becomes more and more concentrated » [74].

First of all, it is necessary to express doubt in a correctness of the resulted figures for the following reasons. LC of ethnoses, civilizations, states have no got sharply outlined borders, therefore time intervals get out any way. The new organization (civilization) always imperceptibly arises in bowels former, and is not clear, since what moment to count "birthday". Occurrence of innovations occurs in various regions owing to integration of local conditions and experience of all mankind. The industrial civilization begun in Europe in the 18 century, but thus, for example, China was in feudalism, the USA the slavery prospered, and natives of Australia stayed in Family - tribe attitudes. Pushtuns in Afghanistan till now continue to remain nomadic cattlemen. By the moment of occurrence of capitalism in Europe the region of Shumer (the first civilization) remained in authority of east despotism. Europe avoided a slaveholding condition and at once from family - tribe societies passed to feudalism. In Holland capitalism arisen, passing a stage of feudalism.

Historical waves moved on the certain geographical regions, as atmospheric whirlwinds (chapter 6.3). From primary family – tribe human substratum non-uniformly enough covering a surface of a planet, three large centers of culture were generated. One region settled down in valleys of the rivers the Tiger and the Efrat (Shumer), another in Southeast Asia (the Ganges, the Chuanche, the Yangtze) [51], the third - on the American continent. Their development was not synchronous. Each region had own history. Europe accelerated the development, and all remained former in Sumerian. Each region had individual, historical LC and individual rates of development. On a planet there are regions where development went fast or in a slowed-up way. Therefore it is impossible to consider the resulted historical periods obligatory for all planet. Told it is possible to illustrate fig. 6.7.1.

LC development of various regions which began from family - tribe attitudes are presented in figure. Depending on geographical conditions, presence of communications with neighbours, from other random factors, development of civilizations occured in different rates. Each civilization can be considered as an evolutionary row.



5

Time

Fig. 6.7.1. A possible variant of historical events time development

Civilizations 1 - 5 can influence on each other, but to be in anarchical attitudes. The civilization 1 quickly finished its LC and created an innovation (a star). The civilization 2 developed more slowly, but also created an innovation. Civilizations 3, 4, 5 lagged behind the first, but inevitably finished their LC, generating something new. It is possible to see, that intervals of time between stars - innovations are reduced. Whether it is possible to draw a conclusion on the basis of this, that there is an acceleration of historical processes? The conclusion about acceleration could be made in the event that innovations would occur in one region.

Certainly, quickly changing regions influenced on development of lagging behind regions, but was not so effective. A convincing example is the combination of a high standard of living in Rome with a family - tribe existence of neibohur barbarous people. For assimilation of another's culture it is necessary "to ripen".

The steadiest and long LC is demographic process. The aggregate number of the population of a planet for the last 7 thousand has reached size 10¹⁰ persons. (Initial quantity of people is about 10⁵) [90, 91]. The aggravated growth occured the in 20 century, having reached 6 billion Under forecasts [91, 91] a maximum is expected to the middle of 21 the century (11 - 13 billion), then should come some period of stabilization and the subsequent recession.

Growth of a human population was nonlinear. The most intensive gain during the given period is observed in Asia, Africa and Latin America. There is no gain in Antarctica (joke). It is possible to consider, that all steady trends of development are those because there has not come time of stagnation yet. Stages of growth and recession have the reasons. In Kapitsa's opinion growth of the population in a geometrical progression occurs because of increase of communications between people of a different gender. Why at constantly increasing communications tendencies to decrease in a population began to be shown? But Podglazov connects growth of number with a condition of life keeping opportunities [132].

In our opinion, LC of a human population is a consequence of many factors set. Such factors can be both communications, and insufficiency of resources. Resources are not boundless, therefore fears of ecologists about exhaustion of biospheric potential are reasonable. But why then, provided with life keeping technologies Europe stopped growth of the population almost for hundred years earlier, than Asia and Africa? Hence, resource maintenance for the person at the given stage of development is not a major factor.

Noticeably birth rate in cities, where a standard of living above, than in a countryside decreases. Cities are «demographic black holes », involving the population of rural regions, as butterflies on fire, burning down in this fire. In the 20 century two third of a planet population moved in megacities [64]. And it can be the reason of decrease in a population of a planet [69]. We again meet the effect of concentration creating mutagen processes. Cities have generated democracy, capitalism, science, culture. Now they adjust number of a population.

In opinion of ethologs [69] decrease in birth rate in cities is a consequence of the genetic program similar to decrease of birth rate animal (zoos) in bondage. Unfortunately, the modern anthropology gives not enough attention to primates genetics behavior, and answers of many unresolved problems are hidden in it.

The question of compatibility of subsystems of various age is far from understanding. The complex structures which are in different LC stages, coexist as children and old men in a society. Examples of a system incompatibility and disintegration (the American Indians and Europeans) are known. The gipsy perfectly assimilated in Europe. In modern India centers of a high level science and almost primitive "layers" of the population coexist.

The understanding of integration mechanisms is necessary for prevention the becoming ripe world crisis connected with increasing distinction in consumption levels and a level of culture. A well - known traveller A.Bombar, wrote: «If, we continue to go on a present way, we shall come to the third world war» which will be «war not between Iraq and Iran, not the Arabian-Israeli war, and not great war between two superstates, but «war hungry against rich». If all world will start to consume as Americans it will lead to crash of biosphere. Hence, that it has not occured, the developed countries should lower consumption or to keep an economic inequality at a level below critical.

At preservation of capitalist individualism nobody will begin voluntary to reduce consumption. However growth of consumption can be reduced itself (curve of LC needs). Sociologists consider, that in process of growth of well-being the desire to increase weakens consumption, greater value is got with needs for safety, validity, self-improvement [86].

Non-material needs are more peculiar to those who since a birth did not test need. Children's installations seldom vary at becoming grown-ups. However today only one mechanism of harmonization of attitudes is known. All leaders who have pulled out forward, should reduce rate not to break the general "harmony". As an example the history of Greece and Rome where attempts to lower heat of an antagonism of people and aristocracy were constantly done, but unsuccessfully can serve. The luxury has corrupted authority, the people did not wish to protect the another's property that played the certain role in disintegration of empire.

At a strong disproportion of mankind development there crisis will come. «The gold billion» can physically try to get rid of the out-of-date elements or "to restore" them according to requirements of "harmony". Americans «harmonised» a society, having finished with Indians, having transformed them in a museum piece. But it is impossible physically to eliminate numerous people of the third world (may be, therefore they instinctively increase their number), therefore it will be necessary to help them in order of own safety. For this reason inside of the developed countries there are funds of the help jobless and deprived. Rich citizens by means of the state and taxes share incomes with poor to reduce a social pressure.

«Obviously, return to traditsionalistic type of development is impossible. It could provide with the vital blessings only small population of the Earth. During an epoch of the Renaissance on the Earth about 500 million persons lived. And now - 6 billion, and without modern technologies the minimal life-support of the population of a planet» [198] even is impossible. Refusal from modern technologies of a survival will lead to starvation of hundreds millions people, and the instinct of selfpreservation hungry will lead to military actions.

So, universality of the law of life cycle is proved. It is followed by alive, lifeless and public systems. Therefore in a view of this law it is expedient to consider a modern condition of a human society.

Conclusions.

1. Universality of the law of life cycle is proved. It is followed by alive, lifeless and public systems.

2. There is a law of life cycles originality.

3. The steadiest and long LC is a demographic process

4. Cities have generated democracy, capitalism, science, culture. Now they adjust number of a population (effect of SEI concentration).

5. The statement about acceleration of human civilizations development is debatable.

6.8. Economic attitudes.

Research from the point of view of a system campaign means allocation of system elements, communications between elements and comprehension of system development purpose. Above we have allocated the invariant of a human society (IAO). Various IAO are connected (cooperate) politically, economically, cultural. The policy is struggle for authority, and is not thought without struggle for possession by resources. Accumulation and distribution of resources concerns to economic activities. Despite of close interrelation, policy and economy is accepted to study separately. The economic system consists of elements (manufacture, distributive elements, warehouses, biolocs. markets, etc.) and communications (road, sea messages, information channels). The purpose of economy is the satisfaction of needs of all IAO.

From STS positions the modern economic system has the history leaving in biospheric processes. Economics is a continuation of material exchanges in biosphere. Trophic circuits are constructed by a principle: «the output of one system is an input of another one» [183]. In economic system, also as in biosphere, the product from an output of one subsystem gets on an input on another one (see fig. 6.2.1). All material streams begin from a biogeosphere and again come back into it (to dumps). Obviously, economics not only is similar to exchange processes of biosphere, but is their continuation in human society. Ways of purchase of resources in flights of primates is the same, as in a society. It is an extraction from a biolocus, a robbery «ours» and "another's", larceny (the latent robbery), parasitism, begging. The leader withdraws the flights extracted by them products [69] from members. In a society the state withdraws a tribute, a quitrent, taxes.

Before occurrence of trade redistribution of resources between IAO was carried out only by the wars. For military system the object of an attack is always classified as "another's". The purpose of military system is a satisfaction of needs of the winner. Biological analogue of war are attitudes «a predator - a victim».

At occurrence of a superfluous product have started to develop and economic ways of an exchange at preservation of military distribution of resources. For economic system buyers (sources of resources) always «ours». The economy pacifies society, war alienates. Symbioses represent mutually advantageous exchange attitudes.

Primary IAO were subsistence economies. All product was used for own consumption. Increasing needs of state stimulated growth of manufacture. Occurrence of a "superfluous" product led to trade (exchange). Streams of the goods moved under the same communications on which military captures of raw material, riches, slaves were carried out. For convenience of exchange operations there were centers (markets) where material streams converged. Around of the markets there were cities (settlements). In due course the network of material streams covered all planet.

Trade becomes means of accumulation of the riches strengthening authority. Struggle for authority (the genetic program of behaviour) generates a competition for resources. The eminence of authority increases opportunities of accumulation of riches. Thus, there is a contour of a positive feedback, «an untwisting process» concentration of authority and riches (monopolization of authority). This process stimulated progress of technics, as means of increase of labour productivity. Transition of Europe to capitalism, concentration of national riches at small group of persons led to occurrence of proletariat. The national riches were distributed between group of enterprising people. There was a market, a battle-field for authority and riches. Above we have reflected processes, attractors of which is struggle for resources and authority (means of their achievement). People also genetically aspired accumulation, did not stand aside and periodically broke top of an imperous pyramid. But process of concentration of riches repeated, never stopping. If people would take hold (hypothetically) all national riches and in regular intervals (fairly) distributed it, this process would not be for a long time. Any fluctuation of riches strengthens authority. The authority provides SEI concentration. There is a generation of riches accumulation.

East despotism concentrated authority and riches in the state. In the East (monopolization of authority, resource) a sharp competition did not arise, and development proceeded slowly.

In the West set of free competitors compelled to combat each other for leadership. The termination of struggle meant defeat. It is impossible to stop in crowd of running people.

The technical progress, increasing rate of consumption in the West is a consequence of the process of a competition started by people, and its motives start with genetic programs of behaviour. However acceleration of consumption rates cannot increase is boundless, for it is absurd. The stop of mad race is possible at break of a positive feedback, decrease in heat of competitive struggle.

The East begun accelerated development in the 20 century only under the threat of the western civilization expansion (consequence of colonialism). Communications allow to synchronize world processes. More intensively developing regions exchange with lagging ones by SEI streams, consume their resources, but in exchange deliver technologies, technics (is not equivalent).

More slowly developing countries of the East, Asia, Latin America, Africa try to increase GNP, is frequent due to reduction of the income per capita. As a result from 1985 to 1989 incomes for every person in 40 countries have fallen in 94 times. In conditions of poverty it is difficult to achieve in mass scale of a high level general educational and the vocational training necessary for efficient control on a democratic basis. The rich 1/5 part of mankind consumes in 61 times more, than the poorest 1/5 part [86]. Having more concentrated SEI potential, they untie (war and economic measures) to the politician of an intensification of extraction and consumption of world resources, develop technologies of more effective

agriculture. Human work is replaced with machine work. All this makes LC longer of a postindustrial society but cannot make it eternal.

To stop growth of consumption only the exhaustion of resources can. The consumer society is doomed to crisis of deficiency of resources since the natural biosphere possesses the limited efficiency. The extensive economy should be replaced intensive (idea of zero growth). «Economic development (not growth) on the basis of economy of resources is an alternative variant of mankind development» [153a].

The modern western economic model did not solve problems of all mankind. The market economy could "feed" only those countries which the first became on this way to the region, having concentrated a part of resources of «the third countries», and not strongly increasing number of the population (Europe, the USA, Japan). In mankind there were sharp disproportions in consumption levels and developments, almost 5 billion persons live in tens times more poorly, than the USA and Europe, and now it threatens to stability of all society. Many world communities remain at a level of family – tribe and feudal condition, and 75 % of the population of the Earth undereat [86]. Developing countries can never catch up with leaders while the last concentrate resources of the whole World. Only natural ageing and stagnation can weaken positions of present leaders.

Probably, the consumer society by natural way will change the imperatives. The standard of well-being renders appreciable influence on political convictions and orientations of the person. S.M. Lipset came to conclusion, that financially secure people become more liberally (the full cat can live in a cell with chickens), and poorer – more irritated. Whether can rich resolve decrease in "appetite" contradictions, future will show.

Being in wars, the mankind has not noticed, how biospheric resources are exhausted. Stagnation of biosphere can be stopped by reduction of a human population number, restriction of a competition, decrease in needs.

There can be an objection, that struggle for existence in biosphere did not destroy, but even improved it. Such opinion exaggerates a role of struggle. For example, subsystems of alive organisms (internal fabrics) do not compete almost with each other. The competition in biosphere occurs only between organisms, populations, kinds, and that not always. There are symbioses inside of a kind, colonies (ants, bees, bacteria), collective protection, collective actions. It is realized not only struggle, but also system altruism [69]. Even in market mutual relations except for a competition it is possible to meet alliances, monopolies, unions, corporations, holdings, etc. Firm and enterprises do not provide a competition between internal departments. Despotic, tyrannical, authoritative systems without an internal competition existed many thousand years. Subsistence economies were self-sufficient. In England the competition among manufactory handicraftsmen was stopped [107]. Apparently, in genetic programs of the person egoism is combined with altruism. In a structure of a tribe altruism is necessary for a survival, and the person an essence collective.

It is possible to show, that the ideology of individualism is not the unique program of action even under capitalism. In total on the territory of the USA up to 1965 more than 600 communes existed. M. Barksn in the article «Communities societies as the cyclic phenomenon» [192] marks, that between 1787 and 1919 270 utopian communes were based. 1/3 arose during short intervals between 1842 - 1848 and 1894 – 1900. The third rise of municipal movement occured in the thirtieth years. The fourth period of active creation of communes is at the end of 60s years of the 20 century [192]. "Fair" distribution of resources was propagandized not causing envy.

In individualistic societies the inequality in consumption is entered into the law, therefore there is a competition, race for constantly varying leaders. It is possible to consider, that a struggle and a competition are not the unique mechanism of evolution. We shall consider alternatives and prospects.

We marked, that stochastism and variability are realized in initial stages of LC systems. The regulated coordination is peculiar to maturities. We shall consider from this point of view economy development perspectives.

The feudal facilities was a mature way of life. Rapid development of capitalism in the 18 century testifies to its "youth". LC law foretells stabilization and stagnation of the modern form of a capitalist facilities. Capitalism assumes concentration of riches in hands of private persons and states. The socialism of the Soviet type assumed concentration of authority and riches only in the state. Without concentration progress is impossible, therefore speech should go about optimization of distribution of the blessings between the state and private persons. The economic theory should become another. For example we shall consider some out-of-date dogmas of the economic theory [239].

«Subjects of economic attitudes are manufacturers, consumers and a state» (Keynes). The biosphere, being the supplier and final utilization of all "blessings", in calculation is not accepted. To the concept "blessing" goods and services are carried, forgetting about the natural blessings. This infringement of a hierarchy principle is in research. Biogeosphere is an oversystem of mankind, and the theory is obliged to consider this fact.

Other system mistake is the purpose of economy. The purpose is reduced to reception of the maximal profit. It focuss the population on growth of consumption. In connection with this dogma the level of development of the country is defined by quantity of the made and consumed product (gross national product, GNP). Adherents of «steady growth» keep to linear outlook. For example, T.Parsons reduced all evolution of a society to progress from a primitive and archaic condition to a modern condition [86]. In the end of 50s years. Rostou allocated three stages of development of a traditional society: rise, ripening and epoch of mass consumption. We see, that the named theorists thought linearly. In their representation growth of mass consumption has not an end that is an absurd. Recession of consumption and slump in production of material benefits should come and the reasons can be expected it.

In biology there is absolutely other method of an estimation of "development" of alive essences. Development reflects not the growth of consumption, and perfection of various mechanisms of adaptation, including refusal of consumption, for example, anabiosis. Accumulation and high consumption not always rescues society from stagnation. The Roman empire which has reached a high consumption level, failed under a pressure of barbarians. The mighty and very dear military machine of the USA appears powerless to resist to the terrorism proceeding from the "not developed" countries. Obviously, there has come time of revision of concepts of development, and integration of economy is necessary for this purpose with the evolutionary theory. We shall consider the reasons which stagnations of market capitalism will lead.

1. Increasing inflow of resources which is taken from a biogeosphere is necessary for increase in growth of manufacture and consumption. The stock of natural resources is limited by the sizes of a planet, i.e. we shall really settle, therefore constant growth of consumption is impossible.

2. Market attitudes are inconsistent by the nature since each participant demands freedom of the actions, but dreams to become a monopolist to limit freedom of others.

3. For maintenance market unbalancy state regulation is required.

4. For a successful competition distinctive attributes of a product (differentiation) [207] are required. Multiplication of a competition is accompanied by a superfluous variety of goods. The modern American family uses about 150 names of subjects, and in a supermarket 40000 names are offered. As a result the choice becomes impossible, and, hence, growth of a variety should stop. Infinite growth of a variety of goods also is impossible.

5. The set of competing consumers of resources of a planet provokes aspiration "to use" them more quickly the competitor that accelerates ecological crisis.

The future arises "today", therefore we shall consider the dynamics of capitalist economy development with the purpose to see features of the future. «Pure capitalism» in Europe of the 18-19 centuries was distinguished with a private property on resources. The state minimally limited economic activities, and it resulted not only in growth of productivity with wide use of means, but also to the periodic, crisis phenomena (Kondratyev's cycles) [174].

The way of capitalism led to «the city, democratic, industrial, bureaucratic, rationalized, scale, secular and technological society». Development of economic system of capitalism was defined not by a question: «What is a blessing for the person?», and a question: «What is a blessing for a system development?». Keynes reflected: «When everyone is provided, the society will again start to appreciate the purposes above, than means and to prefer good useful. The avidity, benefit still some time should remain our gods. For only they can deduce us on a daylight from the tunnel of the economic necessity» [192]. Compare with reasonings of a gangster: «Now I have problems with money, therefore it is possible to plunder the passer-by, but then I shall become the decent citizen».

However, how to understand security? Feudalism provided a living wage, but this concept changes. If needs constantly grow, it is impossible to provide them. In the person the aspiration to the best is genetically incorporated, but for this purpose it is necessary to see this "best". If everyone live equally, dichotomia «bad - well» does not arise, since there is no comparison and a choice. The lord always consumed more plebeian, and it caused aspiration to move upwards on a scale of ranks. Even in bacteria the vector of movement is directed aside increases of nutrient concentration.

The dissatisfaction with crises of the free market developed economics in the 20 century aside the government economic processes. The adjusting role of the state in the market economics amplifies. In the end of the 20 century almost all population of the Earth lives in the countries with the market economics. The market subordinated to the certain order which is fixed in rules of law and supported by the state is formed [177, 50]. The state enters restrictions on operation of an environment. Corporations gain in strength, the role of management prevails of spontaneous market processes. In the beginning of the 21 century the monopolistically public sector by the nature was amplified. On the foreground there is a rivalry between large monopolies and oligopolies in the markets, national and world. The state improves regulation of monopolies actions (adjusts the prices). The European economic community defines rules interstate «transformation» of goods. Value of centralization grows.

The made generalizations allow to extrapolate the development of economics in the future. The main mechanism of directing development of economics is the will and decisions of public leaders. Stochastic search of an output from stagnant situations in the form of uncontrollable market processes is represented as the phenomenon incidental (300 years in an interval of 6 thousand years). Only loss in competitive struggle of sources of well-being induces economic system to search self-preservation variants search and reforms. Initiative "brains" are released to freedom, the system breaks up to set of independent search elements. If something is found successful general imitation and development of new economic attitudes begins. Reforming is carried out through occurrence of new subsystems (proletariat, technical systems, cities-states, manufactories, investors, banks), concentration of a resource and development of communications.

The "free" market, being effective means of production and consumption, is not interested to produce «the public blessings», to provide social guarantees. The aspiration to maximize profit removes care of the future generations and preservation of biosphere on a background. The excessive quantity of «the free market» can become "poison" both for economy and for biosphere. The state is not capable to supervise "free" activity of millions businessmen. It should emphasize, that speech, first of all, goes about a commodity market and services which manufacture strongly influences a condition of biosphere. Labour markets, money, securities do not create direct threat to biosphere yet.

The market is unstable, since spontaneously rolls down to the monopoly. It is paradoxical, but it is possible to provide freedom of the

market by the intervention of the state. A developing manufacture and its specialization cannot exist without the market, but it should be other, more humane market. In our opinion the future belongs to the oligopolian market.

Existence of natural and artificial monopolies is justified by that they give a huge economic prize from greater scales of manufacture and have an opportunity to develop and introduce achievements of the scientific and technical revolution, demanding large material inputs and releasing mankind from biospheric dependence.

In comparison with numerous absorbers of biospheric resources the monopolist has an opportunity not to hasten them to absorb, hence, behaves in relation to biosphere more rationally. The monopolist can stop escalating of gross national product and carry out strategy of zero growth (if the population will not grow) without risk to be ruined. It is obvious, that behaviour of a small amount of monopolies (oligopolies) is easier to supervise for the state.

Apparently, the next transition from stochastism to coordination already was outlined. Experiment of the free market passed the test of all time about 300 years (also as a short-term democracy of Ancient Greece). The adjustable economy comes back, showing thousand-year survivability. It is possible to predict strengthening of adaptibility to geocosmic dangers. The mankind should pass to a way of operated coexistence with biosphere.

Attempts of operated development cause scepticism not only because of not knowledge of laws of development (it has been above shown, that this problem can be settled), and owing to impossibility to supervise huge quantities of parameters. But for synergetic coordination by self organized systems it is not necessary to know thoroughly all its parameters. It is enough to influence on «parameters of the orde » and it will direct a self - organized system to the necessary attractor [101, 102]. For example, people from an antiquity operated behaviour of horses, but they did not enough understand their biology.

Speed of development modern rates increase shows, that LC of the world economic system approaches to the end of a growth stage which delay of consumption growth will follow.

So, there is a hope, that the USA and Europe will stop to increase consumption of material benefits (zero growth), will pass to manufacture and consumption of the information (knowledge). This transition is similar to evolution from instincts to reason. "Intellectual" technologies more flexible, allow to find optimum decisions. While the countries living only due to export of resources, are deprived an opportunity of maneuver in the narrow corridor of development. For example, a total product of a mining industry of the USA in 1996 has grown on 25 - 44 %, in a process industry has grown on 156 %, and in information branches - on 625 % [86].

Therefore the postindustrial period is an epoch of an information civilization. Concentration of intelligence allowed to make bifurcation in a new civilization once again. Intellectual technologies allow to lower sharplny consumption of scarce raw material, expand a raw-material base, reduce raw dependence of the West on the East and Asia and by that worsen their economic situation.

It has been above shown, that new always is born from ERs integration. On a planet today two cultures cooperate: traditionalistic (collectivist) and postindustrial (individualist). As a result of cultures dialogue there can be new values, and it will open prospects for new strategy of development. LC of former ERs will end and LC of new begins.

It is possible to expect, that the growth of economics and cultural inequality between people begins to decrease as a result of increase in communications, contacts, exchanges. Migration (diffusion) of the population of backward regions in the developed countries of Europe is observed. Emigrants offer cheap work in exchange for the best conditions of a life. Gumilev marked an opportunity of regeneration of ethnos as a result of immunity loss. As a result of integration there can be an occurrence of the new ethnoses, new geopolitic structures, but to smaller differentiation on a standard of living, than today. The postindustrial civilization is connected not only with technological revolution, but also spiritual reformation, revision of some former basic values of technogenic culture. Distribution to planetary scales of a consumer society ideology and a masscult will promote ecological, anthropogenous crisis.

The world bank and the United Nations have generated the special agencies directed on the development of methods of accelerated development of the lagging behind countries. The basic difficulties of a westernisation consist in conservatism of cultures, customs, mentality, institutes of a traditional society. The Roman culture, cities and comfort was not necessary to barbarians. The technologies well working in the West, in a combination to east mentality lose a part of productivity, therefore even at their development by the third countries of advantage of the West will be kept. Synthesis of a technogenic civilization and cultural specificity of the countries and people is necessary. [86]. If it is impossible to smooth distinctions it is necessary to find ways of existence of the systems which are being at various LC stages.

However now processes of differentiation prevail of integration. The tendency of the West separation from the third world is observed. Owing to a scientific and technological revolution resource dependence on backward regions decreases. The scientific potential concentrates. On a share of the USA 44 % of world expenses for scientific development are necessary. The West incurs functions of intellectual universal system, leaving the third world a role of agencies [77].

It is alternatively expedient to consider the evolution leading the systems of organism type. Any organism consists of different purpose organs. though organisms have arisen from colonies of "equal in rights" cells. Local human societies have always been socially differentiated. Inside a society people are not equivalent. However the person, passing from one society into another one, can change the status, as a trunk cell of an organism. This property generates migratory processes.

Evolution of events can approach a population of people to a condition of an organism, where organs (states, people) are specialized and consolidated in achievement of an overall aim. The condition of an organism does not provide conflicts between cells. Inside of a tribe (flight) there can be conflicts, struggle for a resource, for authority, but at occurrence of external threat flight, having forgotten about insults, enters as a unit struggle for a general survival. People can have something similar. Threat of destruction in ecological accident, should unite mankind. For this purpose radical changes in forms of mentality should be carried out. Reduction of needs, greater peaceful disposition and cooperation can deduce mankind from crisis. These requirements are not new. We daily hear about them from politicians who do not think of their performance [192].

The inequality of opportunities of subsystems assigns to more developed and intellectual countries necessity to protect them (and the planet) from space threats, for example, meteoric danger. Opportunities of a human civilization have reached a level, capable to destroy dangerous space objects, but to other countries it is not on forces. If to spray economic potential in regular intervals it can not suffice for the specified purposes. For innovations concentration of efforts is always necessary.

Conclusions.

1. The law of non-uniformity of development operates. At a strong disproportion of mankind development there system crisis will come. The leaders who have pulled out forward, should lower rate in order not to break the general harmony.

2. Return to traditionalistic type of development is impossible.

3. If as a result of dialogue of cultures there are new values it will open prospects for new strategy of development. LC of former ERs will end and LC of new ones begins.

4. Succession of events can approach a population of people to a condition of an organism where organs are specialized and consolidated in achievement of an overall aim. The organism condition does not provide conflicts between cells.

7.1. Attractors of human behaviour

The creativity of mankind based on an activity of a brain, is directed on survival of mankind and maintenance of people expansion on all the earth's crust. The person creates for himself the technical addition (technosphere) compensating physiological lacks, expanding an inhabitancy, providing with resources. Activity of the person is reasonable, but activity of self – organized biosphere is spontaneous. Why does the reason of the person repeat synergetrics of "unreasonable" biosphere?

In this chapter we aspire to show, that the synergetrics of the nature of the person is materialized in creativity (technical, political, economic) through subconsciousness, therefore algorithms of history are similar to algorithms of activity of the lifeless nature and biosphere.

Existence of installations system and the reactions imperceptibly defining human life, K.Yung named archetypes [243.] «Not only elementary behavioural certificates like unconditioned reflexes, but also perception, thinking, imagination are under influence of congenital programs, universal samples. Not only the majority of actions of the person, but also all the historical, cultural phenomena depend on subconscious inclinations, which are sublimated in spiritual activity and first of all in spheres of religion, art, philosophy, policy, morals. The prototype or an archetype is a result of huge experience uncountable of some ancestors. We go down to a heritage ancestors who were before the man. The mental device always established attitudes of an organism with environment, therefore in mentality typical reactions on repeating conditions of a life were embodied» [243].

Knowledge about the World is not full and represent only simplified images of a reality, i.e. of a model. Each scientific epoch perceives the World, builds mental models, sifting the information through the filter of the certain paradigm. In turn, the paradigm of each epoch is a product of ordering of the social information in public consciousness and is acquired during education of the person. (The model of the flat Earth existed in outlook of people during some thousand years). Paradigm style of thinking can leave on a level of subconsciousness and does not give an opportunity to perceive an innovation. This level of consciousness is not inherited. K.Yung named this phenomenon **individual unconscious.**

Collective unconscious (archetypes) is transferred inherit. The spider is able to spin a web owing to presence of collective unconscious experience. Mutual relations of genders and interest to another gender are congenital. The feeling of famine, fear, love, envy, desire to have, etc. are transferred inherit. Ethologists find out these programs of behavior in many animals [69].

K.Yung illustrated existence of behaviour archetypes on an example of interhuman dialogue standards, but A.Bogdanov had gone further and all organizing activity had connected with the genetic inheritance. «The person in his organized activity is only a pupil and an imitator of the great general organizer - the nature. Therefore methods of human cannot fall outside the limits methods of the nature and represent only special cases in relation to them» [30].

A course of history defines stability of behaviour archetypes, as well as any genetic programs. The mankind of thousand years « attacks the same raker ». A.Bogdanov wrote: «there Is no a progress of the human nature, - it is enough whirlwind of the history to break a paper raincoat of a humane civilization from the European in order to find out the immemorial cave man under it». Behaviour of the BC person and the modern person remain very similar. It is enough to compare fables of Ezop, Krylov and the present to be convinced of it.

A well - known psychologist Piazhe, studying reasonable perception of babies and children, came to conclusion, that roots of reasonable perception lay in instinctive reaction to former experience of a kind (mankind) [170]. Presence of people actions invariants and instinctive behaviour of the nature erases a side between reasonable and unreasonable actions.

So, thinkers of the past noticed, that acts and decisions of animals and people are determined by some patterns, pass from the father to the son through genes. This mechanism, most likely, functions on a level of subconsciousness. The bark of a brain is young formation and to a lesser degree bears in itself rudimentary mechanisms of behaviour, a choice and decision-making. Subconsciousness can accumulate empirical experience (intuition, individual unconscious). Subconscious character of the person creativity determination can be shown on an example of the music embodying not realized language of emotions and created by means of combination theory of sounds. Laws of the music pieces organization (the theory of music) are explicised from products of great composers, as Aristotel logic is explicised from speeches of orators. We shall consider music from synergetic positions.

Development of a music piece begins with a theme (the main melody) which then passes in a variation about the melodic attractor and, often comes to the end with a voice-frequency chord. There are nonlinear rhythms (syncopes). A melody and all its variations are homological row of a theme development. In polyphonic products combinations of melodies and rhythms compete. Set of musical instruments sound harmoniously. Periodically the harmony is broken, then restored, but the end is often harmonious. The listener has a pleasure from hit in the expected purpose (harmony). The same sensations are tested by the fisherman when «pecks!», and the mushroom picker when «has found!». Concurrence in sensations of music at the composer and listeners testifies to unity, any structures of subconsciousness.

Periodically solo (dominants) (relay race) passes from one instrument to another one. If it is an improvisation it reminds self-organizing since accompaniment does not contradict the soloist and creates with it harmonious sounding. Rhythmic figure of music is fractal by nature. Low sounds count slow (whole) steps. Basses always sound more slowly tenors. The above sounding, its rhythmics becomes more mobile. Fast rhythms are peculiar to high notes.

The separate sound has its own life cycle. The sound types loudness and fades not instantly. High loudness corresponds to concentration of emotions. Any melody has its own life cycle. Life cycle of a sound is shorter than life cycle of a melody. Similarly, life cycles of microorganisms are shorter, than of large animals are.

If the sound has no vibration on loudness and frequency it is perceived as ugly, unnatural sounding (in the nature of self-oscillation are peculiar to all processes). The executor of music constantly deviates from a metronome rhythm, slowing down and accelerating and a rhythm (fluctuations).

The law of proportionality is observed. If percussion instruments muffle the soloist it is "bad form". Infringement of proportionality causes negative emotions, and return to a harmony causes positive emotions, feeling of satisfaction. Periodic discords are emotional "whip", and coming to them in the stead consonances - "gingerbread". Harmony of music and harmony of biotsenoses cause similar emotions.

So, musicians possess aggravated "perusal" of the subconsciousness, by means of musical instruments carry out sounds which resound with subconscious processes of the majority of people. The ear for music is transferred inherit, hence, genetic programs embodied synergetic experience of all nature.

It is possible to explain existence of archetypes that the person himself is a product of biosphere development. His brain has passed a long circuit of evolutionary transformations. The individuals, made correct decisions coordinated with laws of development (natural selection) survived. Therefore in brain canons of development may be fixed which determine decisions, acts, behavioural reactions. We shall add an existing picture of behaviour patterns with examples from science and technics.

Creativity of people is as much as possible concentrated in engineering activity. Marx formulated a problem of studying of organic laws of development of technics since on them it is possible to study laws of development of consciousness. It is possible to tell, that now such researches are already lead [12], rules of designing of technogenic systems and processes are formulated, therefore our problem is reduced only to comparison of synthesis algorithms of natural and artificial systems. In the reasonings we shall begin with the analysis of Descartes rules [12]. Here are some of these rules:

1. Each difficult question decays on so much private questions that there was possible their easier sanction.

2. Always to begin with the elementary and gradually to pass to more complex.

3. To make full reviews of works of predecessors.

These rules, reflect laws of the nature development. The 3 rule recognizes that any new system is a combination of already known blocks and subsystems (see ch. 5.6). «New is well forgotten old». «Without knowledge it is impossible to invent, as it is impossible to compose verses, not knowing a language» (A.Einstein). The inventor, as a rule, uses receptions which were already used somewhere in other areas of technics for the decision absolutely other problems for the decision of a technical

problem. The more widely an outlook of the inventor, the easier to use loan of decisions [12]. French gardener Mone thought up ferro-concrete garden tubs. Use of this idea to other problems has allowed to solve set of building problems. Edison invented a phonograph - the device for record of a sound, having connected in a new combination of known elements.

Descart's second rule (to begin with the elementary and gradually to pass to complex) recommends to build cogitative designs in the same sequence in what natural systems developed (the law - from simple to complex and chain processes of evolution. See ch. 5). Human inventions go as a circuit of consecutive improvements of already known designs. There is a great variety of examples, we shall result only some of them [12].

Belgian Zhobar suggested to heat a coal stick for house illumination. Later the American Farmer designed a lamp for illumination of the house. From 1840 to 1860 years 6 patents for modernization of a lamp was given out. In Russia captain Sergeev constructed and used in the army a projector with a platinum string and water cooling. A.N.Lodygin (1872) has it, but only Edison achieved a sufficient operation time of a lamp, but also till now a process of perfection proceeds.

The steam locomotive, steamship are hundreds and thousand separate of inventions. A bicycle is continued to invent till now. In 1813 a forester Drez thought up «the racing machine». There were not pedals, at driving legs from the ground made a start. In 1840 there were pedals on an axis of a forward wheel. In 1845 - brakes. 1884 - chain transfer. 1890 Γ - pneumatic trunks. 1897 - the mechanism of a free course [12]. In chapter 6.3 evolutionary numbers of technical inventions of mankind, by extent of thousand years were traced.

Descart's first principle is already illustrated by the resulted examples. Evolutionary movement in the nature is spread out to a number of short steps, each step is realized, when conditions for this purpose are created. Inventions and discoveries which have outstripped opportunities of an epoch, remain not noticed for their contemporaries and are noticed many years later, often after the repeated invention. An example can be the project of helicopter by Leonardo de Vinci on the muscular engine. In 1842 an Englishmen Henson and Stringfell invented «parofly» for flights from England to India, but capacities of the heavy steam machine was insufficiently for realization of the project.

The idea advanced real opportunities of technics, and natural selection rejected decisions, but ideas continued to be stored in social memory of a

society while development of other evolutionary numbers "would not catch up" with the stated idea, and the new successful combination (integration) would realized in "design". For example, the plane has departed only when there were easy and compact engines.

Altshuller - the talented researcher of inventors technical creativity algorithms, explicited from tens thousand inventions some decisions invariants [12]. It is necessary to note, that inventors operated intuitively, hence, decisions came from subconsciousness. Similarly from speeches of orators Aristotel explicated logic. In chapter 4 the idea is spent, that the system thinking "is sewn already up" in subconsciousness. The problem of training to methods of creativity consists in translation of not realized processes into a level of consciousness. We shall consider some receptions of decisions search, invariant to algorithms of the nature development. The fat font allocates Altshuller's recommendations. A normal font - natural invariants.

1. The decision of problems through division of objects into different parts on value. Separatism, specialization, differentiation are the basic receptions of synergetrics of the nature (chapter 5.2).

2. The decision of a problem through the change of the next objects. The more control system in some organization is developed, the greater degree it influences on an inhabitancy. In the 3 chapter there is an example of procariots influence on the atmosphere of the planet and aspiration to transformation of the nature by the person. In market attitudes reflective management of competitors behaviour is carried out.

3. For the decision of a highest level problems the knowledge which is falling outside the limits of a speciality are necessary, it is necessary to know laws of development of technical systems. The humanity and natural science are involved in the present work for invariants revealing. For example, Malinetskij G.G. considers it is necessary a creation of " theoretical history " - a science dealing with historical processes [132].

4. Decisions where the prize of one party is accompanied by the loss of another does not suit. The mankind which has lost during evolution an acuteness of natural sensor controls, was compelled to compensate this loss by means. The unwillingness of power structures to go on concessions to people and other classes led to revolutionary crises.

5. **Terms impose patterns and stereotypes.** A vivid example are dogmas about inability of animals to think, about exclusiveness of human consciousness, about rigid differentiation of concepts "instinct", "reason", "coordination".

6. The minimal task is an elimination of a defect. The maximal task is an output into oversystem. Homeostatics is focused on elimination of defects (the minimal problem), but evolution is ERs integration, i.e. interaction with oversystem.

7. It is necessary to see simultaneously elements, subsystems, oversystems in dynamics. Development synergetic theory of systems, introduction of the concept an evolutionary row corresponds to this recommendation.

8. It is necessary to plant the clashing parties in space and in time. This reception is widely used in resolution conflicts between people in organizations, between conflicting countries (peace-making forces).

9. Inertia of interests is above interests of economy, interests of common sense. People use long the out-of-date ideas. This statement was repeatedly generalized in the present work as the law of inertia, conservatism, traditions, customs.

10. It is necessary to observe the law of power conductivity of communications. In chapter 6 examples of destruction of large empires because of not effective communications, and also importance of sea communications for realization of expansion of mankind, for «suctzession» of civilizations were resulted.

11. The law of non-uniformity of a system parts development, a nonagreement of rhythmics of development of parts. Non-uniform accumulation of riches, non-uniform development of human society resulted, and will lead to wars, crises. The law of life cycle follows from the law of non-uniformity.

12. The choice of the decision often depends on preference, instead of rationality. This idea proved to be true at bifrucations discussion under the scheme « and-and» and will be considered in the following section. Actions of people do not submit to laws of probability theory, the choice of the future is regulated by preferences and available opportunities.
Apparently, evolution of a technosphere all over again occurs in consciousness of the person and only is then materialized in history of technics, science, economy, civilization, policy. This fact is proved by analogousness of biosphere development algorithms and a human society (chapter 5 and 6).

So, in all kinds of creativity there is something general. People unconsciously used receptions of the nature. The further development of technics cannot be without use of the nature patents. The life of scientific theories in many respects coincides with laws of machines development [12]. If development of a technosphere follows algorithms of synergetrics mechanisms of consciousness follow laws of development of all nature. Laws of development are sewn up in subconsciousness and transferred genetically from ancestors to descendants.

It is interesting, that the reason compensated not only lacks peculiar to the person, but also added some absent functions by technogenic way. The person and primates are not able to fly, but the person created technogenic "wings". It is possible to consider, that flights of the person are borrowed from experience of the nature (bionics). Who does not know flights in a dream? Perhaps, the person has held in remembrance rudimentary flying bodies in recessive genom bank? Whales kept rudiments of legs though for a long time do not move "on foot". Earlier the question of biospheric experience genetic bank existence was discussed. It is known, that some ancestors of primates flied. We shall consider an evolutionary row of «flying devices» in its evolutionary sequence.

Flying fishes, insects, reptiles, birds, animal-gliders are known. At last, unfulfilled projects of Leonardo de Vinci, aeronautics (in France, the 18 century), balloons and dirigible balloons (the 19 century). Practical application of devices which were harder then air began on a boundary of the 19-20 centuries. Range, speed, height, capacity, carrying capacity, profitability of flights grew further. People began to apply jet draft and rockets.

The wheel in means of alive essences transportation is not used, though the heavenly mechanics is constructed on rotary movement. The Earth can be compared to a wheel having a virtual axis. The solar system, the galaxy also are space "wheels". The mankind used a wheel still in Shumer civilizations. The sailing charter originally used oars (analogue of a fin) and a sail. With the advent of the steam machine rotation (wheel) has superseded all the others «movers». The wheel enters almost into all machines and mechanisms. But the wheel land transport has demanded development of a roads network and the industry of their construction. Cities have the concentrated network of roads. And it alienates at biosphere so much the grounds that starts to threaten its well-being. The mankind, taken a way of «the wheel world» (bifrucation), now cannot curtail from it, entering in the next crisis. Perhaps, alive essences "refused" from a wheel mover because they were not able to build roads.

Obviously, conscious actions not always operate on patterns of the nature, carrying out stochastic search of new variants of existence. The consciousness, a bark of a brain have arisen concerning evolutionary time recently. The brain as operating organ, the tool of thinking, exists no more than 500 million years and accumulated synergetic experience of this time.

High abstractions, for example, mathematics, grow out activity of consciousness. Whether the consciousness can get into secrets of basic, in secrets laying outside empirical experience of a brain? Proceeding from evolutionary experience "sewn up" in subconsciousness, from the past in the present (go-ahead coordination, suctzession), it is possible to assume translations of the information, that the biosphere, following synergetic laws of development of the lifeless world, accumulated laws in biospheric genom. And genes were got by the person inherit.

For example, the consciousness is limited only by three measurements. The four-dimensional world is not felt as consciousness. Time and space are subjective ways of the world dynamics sensation (see chapter 1.7). Everything, that lays outside common sense, is perceived with greater work.

The common sense is a pragmatical experience of all individuals. The common sense measures the World with use of body parts (sazhen, foot, span), and time is calibrated by onthogenes (age, term of a life, instant, century). Long geological, biological and historical processes "are not covered" by short-sighted and "short-term" common sense since the interval of a human life is immeasurably shorter. The common sense cannot perceive nonlinearity, irreversibility, infinity, chaos.

The nonlinear and multivariate world as though is absent for the person. The person "does not see" four-dimensional objects as an eye of a frog does not perceive the motionless world. Only the opportunity to abstract from common sense (by means of mathematics, for example) is capable to lift the person above rudiments of linear consciousness.

Surprisingly, but also very large scientists owning abstract thinking, cannot avoid a temptation of linear extrapolation of the phenomena, laws, models in the future and for limits of "visibility range".

The mechanisms of development developed by the nature, subconsciousness was kept owing to **conservatism** which is similar to the law of inertia, to Le – Shayele principle, to functions of the immune system keeping homeostasis. And it means, that everything, that is checked up, it is necessary to keep, and new to reject (5.4). The innovation should get imperceptibly (espionage), or to make the way of the big redundancy (war).

Conservatism is shown in all fields of people activity, for example, in science. The more revolutionary the invention is, the greater shock and resistance it causes. The facts of tearing away not traditional food are known. In Russia the liberation of peasants caused much unpleasant peasants, attempts of resistance to introduction of the steam machine on sailing vessels are known, struggle of carriers against the car, etc. In the beginning the theory of a relativity was torn away by the overwhelming majority of minds, and everyone who tries to deny it are suppressed now. The new information meets a phrase: «it cannot be ». Later time a phrase will be replaced: «there is something in it». And, at last, the innovation is fixed: «to whom it is not known?». The innovation passes in a stage of homeostasis and becomes a support of conservatives.

In the alive world conservatism is shown as the mechanism of a reparation of cellular mutations, the sexual selection, natural selection. In a human society it is a conservatism of customs, cultures, beliefs. The rejected innovation does not disappear, and it necessary exists in a virtual condition. There is a basis to think, as genoms mutations, not being are materialized, deeply deposited "poste restante" in bowels of DNA because they can form a base for the future combinations.

Conservatism is a display of rational genetic programs of the behaviour fixed in structures of a brain, interfering non-uniformity of development of parts of systems (technical, political, economic, biological). Conservatism constrains disproportionate development of parts of the whole, preventing fast disintegration of a system.

7.2. Attractors of political and economic behaviour.

Coordination in the form of policy organizes activity of the C block in IAO on operation of a biolocus, extraction of the "own" resources and capture "another's" (wars). As a whole the policy is directed on a survival, self-preservation, IAO adaptation.

Economy, as well as policy, is focused on IAO self-preservation, but by other means. Economyl organizes receipt, manufacture and SEI distribution of resources inside IAO and behind its limits.

A task of the present chapter is finding-out the motives defined invariants of a society development during thousands of years. As base for the analysis the works of psychologists [66] concerning the theory of management, the theory of acceptance of administrative decisions are served. Methods of generalization of the isolated facts are taken from the general theory of systems and the synergetic theory of systems (4.4).

Actions of the person as an alive essence, are based on needs which are subdivided on material (substance), power and information. They can be hereditary (famine, thirst, warmly) and got during onthogenes (aesthetic, etc.). The psychology studies motives of people behaviour, but, as well as all other sciences, shares on spheres of influence.

The political psychology considers, that "a psychological field of authority" natural, as a field gravitational or magnetic [242]. The political psychology finds out attitudes of the person to authority in occasion of «the control of the incomes and charges, the civil rights and duties, a freedom of movement and a freedom of worship». Each person by all means carries out authority and, at least, obeys authority, being in its field. A product of work in political activity is the system of authority which is capable to provide a sufficient level of IAO life-support. In chapter 6.4 we showed the authority as means of reflective coordination was formalized. Without possession of resources the authority is impossible.

Every time, moving to the new public environment, the person changes the psychology-political features. The political behaviour of the person is entirely defined by that public environment in which it is (adaptation). The society during all history spends huge efforts to formation of political stereotypes in consciousness of the person: needs for work, labour motivation, readiness for labour expenses, reception of concrete results, satisfactions from work.

Referring to chapter 3, it is possible to rank political activity to administrative one. The aspiration to leadership meets at all high

developed animals. Some people are ready to die for political prestige, and others easily concede leadership. In each person there is a program of submission to leaders which is especially strong at children's age. Without this program coexistence in collectives (C) and education would be impossible. The history of political strike is stated in chapter 6.3.

The success in political strike is often provided with riches, therefore mentality of politicians is defined by it. The policy aspires to transform a society into the human ant hill, submitting to politicians, but the society resists to it. Politicians get the best is more often, because their imperous motives are stronger also than action are more provided by resources. There is a struggle of various social ideals. Selection occurs by results of «pulling of a rope». Struggle for existence (not up to fat) is aimed at conformism (altruism). Struggle for transformations is aimed on transformism (egoism) [34].

It is considered to be, that the society develops progressively. However «progress - recourse» are estimations subjective concerning some public ideal. Progress represents a way leading to the purpose of society, and the purpose can be false. Therefore at loss of ideals the belief in progress is periodically lost. At different LC stages ideals can vary [34].

Passionar pushes generating new ethnos (L.Gumilev), are possible to carry to political activity. Passionar stage approves a cult of force, expansion, intolerance to heterodoxy. For example, in Iran (591-651 years) grandee Mazdak seized power and exterminated the nobility and clergy, intelligence of the nation. It has generated decomposition of culture, further there was a gain arabs, emigration and destruction of all competent and formed Persians. Then new people with new culture and a modern language» [59, 60] started to develop. On a maturity ideals of ethnos change. Passionars start to irritate inhabitants who do not have desire somewhere to aspire, and passionars leave «into a shadow». Social installations change, sluices for new ideas open. Science and culture are developed, scientists and poets are not exterminated any more, people simply ignore and do not prevent to create them [59].

It is necessary to understand, why authoritative leaders often suppress "another's" ideas and initiatives. Where was a motive of authoritarianism dominating in history from? To answer the question it is possible only from STS positions, making a start from the concept of evolutionary rows (ER). Obviously, the role of the person in history is shown through the force of motives. "Sounding" of motive stimulates to actions. Monotonous motives (patterns) do history monotonous, therefore predicted. We shall carry out the system analysis of general motives of the behaviour defining a course of human history.

The open systems require inflow of resources from an environment and "dumps" of functioning products (ability to live), therefore a lot of attention in a human society is given to these problems. Economics developed as the mechanism of a substance exchange organization in a society. First of all the alive substance fulfilled mechanisms of getting SEI resources (food). A source of resources is the environment. For sources of the limited resources all IAO apply, therefore organisms developed programs of conducting struggle for resources. The person, not being exception, for extraction of resources by sward and plough created C and P blocks. People extract resources from "own" biolocs, by means of the "own" members of a collective (C). People take away resources from "another's" IAO by actions of the "own" soldiers.

On an output of a system products of activity come. "Corking" of an input and (or) an output leads to destruction of any alive object (3.4). The overall objective of all alive is self-preservation. For this purpose receipt of resources on an input, homeostasis realization and "dump" of products of ability to live in an environment should be provided. These major functions are supported by the automatic programs of behaviour provoked by subconscious motives. Needs for substance and energy are satisfied by means of work and economic system. In research of motives of behaviour «the economic person» were engaged A.Smith, A.Marshall, Keynes, but classics too simple approached to this question. The galaxy of scientific psychologists reveals set of various motives of the person behaviour [66]. Results are generalized below.

Activity of an organism concerning maintenance with SEI resources is supported by different displays of mentality: greed, avarice, thriftiness, economy, feeling of the proprietor, larceny, begging, aggression, needs expansion, egoism to "another's", altruism to «own», curiosity, etc.

The target channel bears other loading. It is not only means of sanitation of alive object, but is also a source of the information acting in an environment, means of influence for an environment. For biosphere the main information is the genetic information. Distribution of the genetic information, its duplication, relaying is means of preservation of a kind (sort).

Sexual duplication allows to reproduce the information in numerous posterity with the purpose of self-preservation of the individual, a kind, a tribe. Primitive forms of a life support stability due to superfluous reproduction of posterity (fish, insects, plants). More developed animals learned to protect posterity (information) from destruction that allowed to reduce number of descendants without damage to a survival. This trend is shown in «the main instinct» all alive - continuation of some kind. Fish throw millions of caviour. Most "worthy" male contains "harem" in flights and struggles with competitors. In ancient tribes polygamy prospered. Prepotent male supported genetic health of a tribe. Now also harems exist at different people. All the known feeling of jealousy is a vivid example of the genetic program of the behaviour applying for the right to distribute only the genetic information. The human culture and great bulk of fiction is densely involved on this problem.

In the present the motive of the maximal duplication has lost a urgency. Struggle for leadership, for authority any more does not pursue the purpose of increase in quantity of the children. It is connected with that in mankind there was an alternative information motive - duplication of social genes, duplication of the social information on. Greater value is got with social security of posterity, ability to support, bring up (not quantity, but quality), for this purpose experience, knowledge, jearning is necessary. The social information supplements the biogenetic information.

The aspiration to authority enables to distribute own ideas and influence. All dictators and lords of the world gave a big attention to creation of architecture masterpieces, tombs, mausoleums which forever in the future broadcast memory of their greatness. About leaders in social memory of a society it is kept more information, than about the "simple" person (a printed matter, legends). In the environment of scientists uncompromising struggle for the ideas is conducted. The actor's environment embodies the information in "love" of spectators by all accessible methods. Religious faiths with special irreconcilability approve "validity" of the doctrine and struggle for "flock". As we see, the main instinct (motive of duplication) has undergone a mutation, but was kept in the form of the social phenomenon. Duplication of the genetic information kept an urgency, but was added with duplication of the social information.

The insuperable aspiration "to prove to be, to leave the memory in generations, is fixed in genes in the form of behaviour programs shown at

an unconscious level as motives (an internal voice). A monument on a cemetery, the will where to be buried, also satisfy this motive.

After death of the person socially and biologically significant information which associates with concept of "soul" remains. The soul "moves" in information system of other people not only after death, but also during lifetime of its carrier. Living should understand, in what an essence of their immortality. It is the information in DNA and «kind memory». So, owing to STS it was possible to make one more significant generalization in the sphere of psychology.

So, «the motive of preservation and broadcasting of the information» integrates variants of display of people mentality. For example, aspiration to glory, authorities, honour, respect. Snobbery, pride, distribution of the ideology, suppression of "another's" ideology, study, self-realization, curiosity, conservatism and so forth.

Aspiration to relay "own" information to increase, keep, transfer in future (inheritance) is consequence of the universal law of quantity increase and a variety of the attributive information.

In chapter 5.1 data were cited how during evolution of alive substance the information capacity of the main data carrier (DNA) increased. An evolutionary number is traced: the attributive information of a substratum - the attributive information of a lifeless matter - the genetic information of alive substance - the functional information of a brain - the social information of animals societies - the social information of mankind.

Opened by means of STS «the law of relaying of the information» allows to explain many historic facts. Barbarians ignored "another's" Roman culture which outstripped their level of development on one thousand years. Vandals destroyed, burned down another's culture, not trying to use it in the blessings for protection of the information against an encroachment "another's". The culture of civilizations was broadcast on a surface of a planet only in a direction of the acceptors, ready to accept it (chapter 6). The others tore away it.

The problem of fathers and children arises on the same basis. Fathers wish to keep the information on the experience of a life, and children adapt for new conditions of a life.

"Young" technogenic systems adapt in alien cultures since subconsciousness has no immunity against them, but ancient traditions of different cultures (religion) is easier accustoms very slowly.

Besides care about SEI resources and multiplication of the information the mechanism of self-preservation from destructive actions of an environment (a trauma, murder, destruction) is allocated. As environment we shall understand surrounding biogeosphere. The set of behavioural reactions, tracking of dangers, acceptance of preventive measures of protection is necessary for an obstacle for destructive actions. For example, care, aggression, curiosity, a cognitive instinct, protection of posterity, a mimicry, migration, feeling of flight, patriotism, division on «our» and "another's". In connection with protective reactions it is necessary to consider more in detail a complex of behavioural «our» reactions in relation to "another's".

In animals division on «our» and "another's", feeling of the "own" territory which should be protected is very precisely developed. In human society the mental image of «the flight» also is sewn up. The attributes distinguishing and another's, can be natural. For example, color of hair, color of leather, the form of the person, language, customs, traditions. They can be artificial (clothes, hairdress, bandages on a sleeve, badges, gestures and so forth). Psycho-biological basis of the person generates larceny, aggression in relation to "another's" (to a lesser degree to «our»), but protects their children, territory and resources.

Peacefully alive essences which do not compete for food resources (biotsenoses, employees of human corporations) coexist in one territory. The competition inside «the flight» less severe, than between flights, because they are connected with the general benefit, an overall aim to survive. Among «our» altruistic attitudes are widespread. Foreigners, "another's" are represented by applicants for resources, therefore the attitude to them always guarded, even aggressive. "Another's" are represented by enemies, foes. They are dangerous, spiteful. It is followed with opinion, that «all our troubles because of them». Here also the base for display of extremism, vigilance, alienation, exile in all possible forms is ready. For awakening antagonism to «another» it is not required efforts. These genetic programs are always ready to action. It is enough to bring a match and a fire will start.

It is easy for society to inspire idea of the exclusiveness, an elitism of ideology, religion. The mankind during evolution got social mechanisms of

behaviour regulation of its members: education, culture, morals, customs, a policy, religion. If do not change genetic programs of behaviour the problem of mankind integration in uniform, "native" society will be never solved. Mankind is not able to reconstruct the genetic basis yet, therefore people will have to use technologies of education, suppressing "harmful" programs of behaviour and making active useful ones. It is known, that the phenotype is formed in onthogenes by means of a genotype-environmental attitudes [182a]. It is possible to assume, that passionars appear as a result of original "resonance" of an individual genotype and social genes. Needs of society create conditions for activization of corresponding genes in potential leaders (impriting). For the same reason passionars disappear from a genotype of a population (ethnos). Archetypes of behaviour depend not only on a genotype of individuals, but also from steady behavioural reactions of society. The society provokes standard behaviour of the descendants.

The opportunity to correct behaviour of the person is based on that in genes of the maximum animals and the person besides egoistical tendencies (competitive struggle) the opposite tendency - altruistic is incorporated. As an example the care of many animals of preservation of a kind even to the detriment of an individual can serve. Baboons male enter unequal struggle against a leopard, endowing itself, rescue females and young growth. People show congenital programs of altruism, protecting animal and weak onese. Hence, there is an opportunity to «fastern» work of altruistic programs by means of education.

As an example of positive shifts in behaviour of people slow disappearing of eating people can serve. 6 thousand years ago eating of enemies was considered as a norm. In a victim to pagan gods people were brought. Then in a victim began to bring animals or things. Pagan rites remained in symbolical rituals. Eating of a roll and a portion of red wine symbolizes in orthodox church a participle to a body of the Christ and its blood. Expression «the chief eats me» was kept. Rudiments of eating people are periodically observed among modern maniacs.

Hunting involves men who are ready to pay great money in order to kill a large animal in Africa. Trophies (heads, horns, skins) are a subject of pride. But there are many people who cannot kill, i.e. the internal interdiction takes place. So, it is possible to change behaviour of people, but it is a long process. Religion is the most conservative element of culture and to expect, that there will be a mass transition to a uniform belief, is useless (only atheism for all is identical). Therefore it is necessary to bring up tolerance to other religions, but it is not necessary to build churches next to mosques and synagogues, etc.

It is expediently to participate in national and religious holidays as visitors. It pacifies, removes suspicions and aggression. The mental minority for removal of the majority aggression should not show defiantly the rights to carrying out of cult actions.

Art does not separate people since dances, music, painting have the general genetic roots. It is pleasant to any ethnos, when visitors speak, sing songs in their language. Thus it is not important, in what language they communicate on the native land. Hence, there is a need for a uniform language of communication. It can be one of existing languages or any "synthetic" language.

The modern countries and people are united by economics. Economic integration unites the societies differing on mentality. The science and technics also are perceived by all without antagonism. People are united always with feeling of the general danger, therefore through mass-media and formation it is necessary to develop feeling of the general for all mankind of danger (space, technogenic, ecological accidents).

Education in early children's age is the most effective. This fact speaks that process of maturing of a brain essentially depends on its functional loading. Children's impressions are the brightest, "are literally sewn up" in structures of a growing brain and this period for all life defines feeling of "flight" (national identity, language, culture, mentality). It is possible to consider, that the first, most effective tutor is the family and the intelligence of the child depends on intelligence of mother in a greater degree. The state, the society can influence this process through education of mothers, increase of the social status of women, strengthening preschool education in kindergartens in directions of ethics, morals, altruism. So, motives of behaviour of people are monotonous enough as invariants development. On fig. 7.2.1 the incomplete spectrum of patterns of behaviour of the people is, course of human history subconsciously defining (motives) is presented.

So, it is possible to explain the reasons of acceleration scientifically technical progress and the reason of acceleration of biosphere evolution. The main reason it is possible to consider not notorious aspiration to progress, but aspiration to survive on a background of aggressive activity of competitors. In order not to fall a victim of actions from "another's", it is necessary to increase "own" adaptive abilities. The market competition in the same way untwists growth of manufacture, a variety of the goods. Monopolists, not being afraid of a competition, are not interested in changes (conservatism). In fauna there are persistents, which preserve their kind millions of years. Possibly, they are monopolists in their ecological niche and while nobody threatens them.



Fig. 7.2.1. A spectrum of behaviour pattterns

Acceleration of scientific - technical progress, increase of labour productivity growth rates, reduction of LC duration of innovations are consequence of greediness and competition. The aspiration to win, surpass the competitor untwists accelerated processes (positive feedback).

Conclusions.

1. Acts and decisions of animals and people are determined by some patterns which are passing from father to son through genes.

2. Synergetrics of the nature is materialized in creativity (technical, political, economic) through the person subconsciousness, therefore algorithms of history are similar to "creativity" of the lifeless nature and biosphere. Presence of invariants of people conscious actions and reflective - instinctive behaviour of the nature even more erases a side between reasonable behaviour and "unreasonable".

3. All variety of people behaviour can be reduced to a combination of several invariants.

4. The main motives of human activity are relaying of the information (genetic and social) and maintenance with SEI resources.

5. Acceleration of scientific - technical progress, growth of labour productivity, reduction of LC duration of innovations is consequence of greediness and a competition (motivation for SEI maintenance).

8. THE CONCLUSION AND FORECASTS

The cholistic research proceeding from ancient concepts about unity and integrity of the world, continuing works of «Russian cosmits» is lead. In the monography the theory of the organization by A.Bogdanov (isomorphism of natural complexes), cosmism by Vernadsky (unity of alive and inert), the general theory of systems (isomorphism of all organizations), the theory of coordination (cybernetics) and synergetrics are accomulated. The paradigm of global evolutionism research, refusal of a static picture of life, of monocasuality descriptions, of linear logic is put in a basis.

The object of research (development of the Universe) is so boundless, that it is impossible to manage without encyclopaedic generalizations, but in order to see a wood it is necessary to cease to notice distinctions between trees. Therefore Vernadskij V.V. entered the generalized concept «alive substance», having united in it all variety of biosphere. The postnonclassical science with the same purpose integrated reductionism and cholism, ceased to oppose objective and subjective. The paradigm of global evolutionism integrated fauna evolutionism with lifeless matter evolutionism. The theory of a relativity has united space and time, etc. Each chapter of the present monography also comes to the end with the generalized conclusions. In chapter 8 generalizations are integrated.

1. Fundamental generalization of this monography is the model of a primary substratum» in the form of a universal NETWORK of flexible filaments, the "web" which has neither the beginning, nor the end. In a substratum model the continuity, step-type behaviour, nonlinearity, fractuality, heterogeneity, integrity, dissipativity, self-organization are combined.

2. Deformations of substratum (stretching, compression, twisting, etc.) provoke processes of rotation in various sites of a network. Rotations (whirlwinds) create that it is accepted to name particles of substance with weight inherent in them and a charge. Particles are connected by space of physical vacuum (is poorly studied).

Cooperative movement of particles creates units of substance (atoms, molecules, gases, liquids, firm bodies and so forth). During evolution heterogeneity of the world increases.

Variability of a matter is not notorious aspiration to perfection, and only consequence of deformation of a substratum. "Wind" of evolution "blows" from dynamics of a substratum.

All objects of the world are connected by "web" of a substratum, therefore the Universe can be represented as integrity, as a system.

3. The order and chaos are considered as «two parties of one medal» (2.1). The supercomplex order of a substratum (not understood order) classifies consciousness as chaos. Information, memory, "software" of evolutionary processes "is sewn up" in a fundamental principle of the World, in a network substratum the Order of units of a following level is consequence of the previous order.

Relay race of the order transfer from a primary substratum to its secondary units is observed. The order of secondary levels is easier, therefore the person can be studied. Evolution is presented not as growth of complexity of structure of the Universe, but as curtailing of superfluous degrees of freedom, simplification through ordering (4.4). The maximum hierarch and the most complex in system of the ordered structures is the world substratum. An overall objective alive is not the aspiration to complexity, and a survival, self-preservation, conservatism in conditions of a changing inhabitancy.

4. Various processes (movement) in a substratum are subjectively modelled by consciousness as substance, energy, information, time, weight, an electric charge, a field, moving, speed (4.3). Movement of an indivisible substratum - a basis trinity of substance, energy, information (SEI) (4.2). Evolution of substance (S) is accompanied by the energy development (E) and information (I) in connection with their trinity.

Any object is the unit of various forms substratum movement, therefore in chapter 4.2 the basic concepts of the general theory of systems (OTS) "element" and "communication" are united in one object (two-unity).

5. Following integration is carried out in time. Functionally similar objects of the last present and the future are united in evolutionary rows (temporal integration) (4.4). For example in evolutionary rows it is possible to unite atoms, molecules, cells, brain, DNA, finitenesses, control systems, executive systems, automobiles, the instrument of work, etc. Evolutionary rows of substance result from modernization, perfection of functions.

Temporal integration allowed to unite in a category "control" of concept: self-organizing, reaction, irritability, reflection, instinct, reason, work (3.4). In ER memory of a network substratum, memory of lifeless substance, alive substance, congestions neurons (brain), technogenic memory (3.3, 3.5) is integrated. In an evolutionary row such representations as incorporated as: conservatism, inertia, stability (entropy), homeostasis, traditions, customs and so forth. Gravitation also is considered as the conservative force interfering expansion by the Universe (5.4).

6. An evolutionary row is developed owing to combinations of differentiation and integration (D - I technologies). Each arisen structure (process) exists during an interval of time named as a life cycle (LC) which comes to the end either by disintegration, or integration with other structures.

Life cycle is a consequence of innovative aspirations and conservative forces antagonism. The general law of conservatism is known in the mechanic as the law of inertia of Newton, in chemistry as principle of Le-Shatele, in physics – Lents law, in a society - preservation of traditions. As a whole evolution of the World is represented as superposition of various LC organizations.

7. The present monography expands representations of socially biological synergetrics. Except of bifrucations and accidents (typical for the "mechanical" organizations) development socially - the biological organizations is carried out by means of D - I technologies.

The differentiation (D) occurs as a fan of opportunities («polifrucations») (5.2). Integration (I) a smooth way of development, without jumps and bifrucations. The more difficult system, the longer time chains of evolutionary transitions.

Complex (alive and social) organizations carry out a choice of a trajectory of development not casually, but proceeding from preferences which are stored in memory of a system. Programs of behaviour (preference) are inherited at biosphere, therefore human history invarianting to biospheric evolution. Acts and decisions of animals and people are determined by some patterns which are passing from father to the through genes. The synergetrics son of nature through subconsciousness of the person is materialized in creativity (technical, political, economic), therefore algorithms of history are similar to algorithms of "creativity" of the lifeless nature and biosphere (7).

Expedient acts of people are consequence of a combination of the behaviour programs directed on maintenance by resources (greediness, expansion, egoism, etc.), and congenital programs of preservation and relaying of the personal information (biogenes, sociogenes, glory, popularity, and so forth) (7).

8. For construction of evolutionary rows of alive substance the concept «invariant of alive organizations» (IAO) is formulated (4.5.) IAO present in any alive objects from cells up to mankind and includes collective of alive essences (C), a biolocus (B), means of influence for a biolocus (M), and means of processing of biolocus products(P) (4.5).

9. The processes keeping functional integrity, stability, during LC in the monography are incorporated by the concept coordination. All control systems have a loop of a feedback. The network structure of a substratum creates favorable opportunities for occurrence of such loops. Presence of a positive feedback and resonant effects lead to generation of specific functions. Therefore, from the point of view of cybernetics, the whole World is the generator of substance, energy, information.

Atom - molecular units have many functions similar to functions of control systems in alive organisms: aspiration to expansion (gases, crystals), counteraction to external influences (reaction), aspiration to stability with elements of duplication, presence of memory, reception and processing of information, ability to regeneration, filtration of information (3.3).

ER of coordination became complicated during evolution, there were specialized subsystems (memory, the block of decision-making, the executive block, a network of specialized communications, set of contours of feedback, etc.). Owing to control systems stability of alive systems is realized not so much through durability of communications, but through ability to regeneration (self-restoration). Cells, an organism, a society (colony) are constantly updated. Stochastic processes carry out search of variants of existence by means of D - I technologies (3.4), and control systems "preserve" the best variants of behaviour.

Through coordination the essence of self-organizing of the nature reveals. Self-organized systems do not have a center of "long-term" coordination. In them there is an imperceptible process changes (relay race) of leaders. More "mature" systems get the "long-term" operating centers during specialization. So, mechanisms of evolution are surprisingly monotonous, they are the following:

1. "New" is formed from "old".

2. "Old" breaks up to fragments (differentiation, polyfrucation) as a result of the end of a life cycle. Fragments can long exist, if they are provided by SEI resources.

3. "New" it is formed as a result of integration, a combination of fragments "old".

4. Fragments are integrated into the new structures beginning their life cycle.

5. At integration the part of the connected energy which is used in cinetics "new" is released.

6. Conservatism is realized through negative feedback in a control system, evolucionism - through positive feedback.

Presence of invariants allows to carry out forecasts of a society development, hence, to see the purposes (telelogics). By means of the received laws it is possible to explain a course of human history events.

The generality of a technogenic way of development is inherited from Australopitecs (stone tools). Similarity of family-tribe, slaveholding and feudal attitudes in cultural attractors also is a display of the archetypes inherited from the general African ancestors. Authoritarianism is peculiar to many gregarious monkeys (for example, to baboons).

Occurrence of east and western cultures attractors is a consequence of mankind polyfrucation (from the African continent) under the scheme «and-and». Cultural distinctions between these two attractors are defined by remoteness, a long absence of a cultural exchange, bad communications.

Egoism and altruism are two alternative programs of social essences behaviour. It so happened, that the east attractor during thousand years followed on a way of authoritarianism, despotism. Western attractor showed appreciable altruistic tendencies with Shumer civilization which through thousand years has developed in the European democracy. It is possible to assume, that distant migration of ancient people on the East made some change in archetypes of behaviour to the side of authoritarianism. The consequence of greater propensity to pluralism was accelerated dynamics of the West: intensive development of cities, statehood, a technogenic civilization, capitalism, intensive consumption, economic power and occurrence of ecological to problem. The tendency of the West development was accompanied with natural stochastism, periodic recessions and rises, fluctuations between authoritarianism and democracy. Fluctuations were carried out in borders of some corridor of development. It is possible to note following universal trends of development.

Number of a human population grew both in the West, and in the East. The West has more quickly finished a growth cycle of a human population number and passed to a stage of slow reduction of the population. East population more numerous also repeats this process with backlog from the West.

On the whole planet the tendency of decrease in a variety of civilizations is observed. Civilizations degenerate in two versions: technogenic and traditional (6.2). Development of communications strengthens interaction between the East and the West. Transition of cultures, capitals, economic globalization should lead to their rapproachement.

As a whole the mankind as original biotsenos is on a stage of selforganizing. The big number of subsystems (state, people) counterbalance attitudesas alive organisms in biotsenoses. However the tendency of occurrence of the operating centers in bowels stochastic self – organizing systems gives the basis to think, that the mankind sooner or later will get the uniform operating center.

Successions of events can approach a population of people to a condition of an organism where subsystems are specialised and consolidated in achievement of an overall aim. The condition of an organism does not provide military conflicts between parts (6.8).

Biosphere"s Tsefalizatsiya shows the purpose of its development. The mankind is only a part in this circuit. If the mankind will manage to create superreason, to be protected from whims of stars and galaxies it is possible to consider, that the mankind will execute the mission, also as primates executed the mission, having generated a line of development «the person reasonable». Thus the founder can leave in nonexistence as in due time send away dinosaurs, mastodonts, neanderthal men. What will be new reason?

The biological line of reason development on the Earth has stopped, since people by their actions block creativity of biosphere. Use of means of genic engineering for "creation" of the essences surpassing the person on reason, is improbable. It means creation of competitors on the limited food resources of biosphere. Rate of development of a technosphere repeatedly exceeds rate of biosphere evolution. It is created artificial intelligence which can surpass the creator. Most likely, the new line of reason development will be of the technogenic nature.

So, the purpose of mankind evolution is formulated. Strategy of its achievement is necessary.

1. It is necessary to aspire to association of mankind in the uniform, social system aimed at rational use of biosphere and on creation of an artificial intellect. For this purpose it is necessary to refuse idea of everything equality, to reduce growth of consumption, to carry out an idea of indispensability and system compatibility, as in organisms.

2. In process of an exhaustion of biospheric resources and degradations of biosphere by means of a technosphere to develop technology of protection of people from space cataclysms (struggle against meteoric danger, against a pulsation of solar radiation, etc.), creation artificial biotsenoses, artificial food, to carry out reasonable depopulation.

3. To develop genic engineering as means of the person genofund correction, to create artificial biotsenoses, to adapt for changing geobiospheric conditions of existence.

4. To learn to use the materials most widespread in the Universe (hydrogen, ceramics, silicon, etc.) to use energy of space and vacuum.

5. "To move" technosphere from the Earth into the space, giving to it ability of self-development. To refuse utopian idea of resettlement of all mankind for limits of a planet. Only ambassadors of the technogenic nature can leave into space.

6. The mankind becomes a subsystem of an intellectual technosphere which should protect people and the transformed biosphere from every possible dangers.

The law of life cycle with fatal inevitability predicts stagnation of any organizations. The mankind is not eternal. Stagnation does not mean full disappearance, the reduction and persystent existence is possible. However accident of the Sun through 5 billion years will finish in the life

cycle of the Earth biosphere. Other space accidents ("falling" of the moon, explosions of supernew stars, collision with a large asteroid and so forth) are possible too. There is a hope, that the future reason will find a way to prolong the space existence. How long the mankind of modern type will exist?

The biosphere needed 40 million years in order homo sapience appeared from a flight of monkeys. During total 100 thousand years of human life elements of the future technogenic intelligence are created. Considering high rates of a technosphere development, it is possible to assume, that the events predicted above, will occur not later than one million years. Such far prospect a little interests people living today, it is much more interesting forecasts on 100 - 200 years.

Processes of differentiation and integration (D - I technologies) get "unity", i.e. an interval of time between stages D and I is reduced. In a limit D and I should be carried out simultaneously. Such condition is reached in organisms. Organisms are simultaneously differentiated (organs are specialised) and incorporated (integrated) by a uniform control system.

The trend of the biosphere development, directed on decrease stochastic and an organism type gives the basis to consider strengthening of purposeful processes, that social processes in a society unlinien, but with acceleration are displaced in a direction of occurrence of the organizations organism type (3.4). The mankind should remain various, but integrated in uniform economic system. Each state should become necessary for all human community and then the reasons of world wars will disappear. A variety of elements provides stability to system. Everyone, is necessary to each other, and cannot separately exist. For example, Switzerland had gone through two world wars and almost did not suffer. The world banker was necessary to all conflicting parts.

Already shifts aside integration with specialization (incorporated Europe, the USA) today are outlined. The world economics, the transnational companies integrate world resources in a uniform economic organism, create complete system of communications. «Transforms» of technologies smooth cultural distinctions. The uniform information network, uniform economic space, uniform game rules are the factors leading to creation of a world organism - «uniform mankind». Globalization is an inevitable process, though and causing resistance in the certain circles of the population. It can be accompanied by an economic robbery and lead

to final degradation of the third world. It is necessary to avoid "malignant" course of globalization.

In the 21 century the mankind should pass to coordination (coevolution) processes in biosphere (synergetic coordination). The theory of synergetic coordination opens new opportunities in this process. For coordination of supercomplex systems it is enough to define key parameters of the order which it is necessary to influence.

In the world mankind there should be a uniform control system. The most "intellectual" countries or communities can apply for a role of the leader. The biological program of the person pushing it on competitive struggle for domination, for leadership, for authority, causes the protest if someone another becomes managing directors. Most likely, on the basis of the leading state the operating system will be created, participation in which will be share, and decisions not recommendatory, but obligatory. Today the role of the leader the USA tries to play. However eternal leaders does not happen. They inevitably grow old and on change to them former satellites come. So, it also will be with the USA.

The phenomenon of capitalism (300 years) resulted from concentration of the population in cities, concentration of the capital, scientific knowledge, technics, SEI streams concentrations, pluralism of actions (market). Acceleration scientifically - technical progress, increase of rates of growth of labour productivity, reduction of LC duration of innovations is a consequence of the genetic program of struggle for existence (competition). The competition untwists a positive feedback, creates processes with an aggravation [101].

The reasons of capitalism degradation can be the following: rate of variability of the market will reach such level, that management will lose ability to them to adapt; a variety of the goods will exceed opportunities of their choice (crisis of abundance); the accelerated, uncontrollable absorption of resources will exceed opportunities of biosphere regeneration.

It is impossible to agree that needs of the person are unlimited. Restriction exists in everything, this law defines life cycle of any process. From pleasures also satiation comes.

So, capitalist (individualist) system of coordination will leave in the past the same as slaveholding, feudal. There will be a next integration of evolutionary numbers of individualtst development and collective systems.

In the world history of economics there was no period when only the "free" market dominated. Any management limits freedom. The mankind always was operated by community. "Golden mean" when market attitudes and state regulation are most effectively combined should be found.

Individualism (social stochastism) finds non-standard decisions. The collectivism (regulated coordination) fixes and effectively realizes the best decisions. The policy should be altruistic, collectivist. Science, technics, economics should be individualist. Overlapping of these contrasts will create the future socially - an economic formation.

The genic engineering can promote overcoming of human dualism, namely: combinations of egoism and altruism. The people going in the policy, should be exposed to manipulations (genic engineering or zombiing) reducing in them force of egoistical motives. This unique means of corruption, money-making, aggression, bureaucratism overcominig. Coordination should serve to all mankind. Such tendencies in coordination of business are observed during the 20 century.

9. LITERATURE

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