Creatology: Past, Present and Future

(An Overview)

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It is an important task to repeatedly summarize the results and contexts of any science and discipline. This should also be the case in Creatology. Here we also have to take at least two directions. One of them leads beyond Creatology and widens its theoretical background. The other leads to the further details within the discipline in question. This type of – by the way, first – summary was published by me in 2007 (Magyari-Beck, 2007, 2008). The title of this presentation is ***Creatology From 1977 To 2007. The First Thirty Years of the New Science of Creativity.*** Now we live in the year of 2010. So we can now celebrate the first thirty three years of Creatology. A memorable date! A lot of steps were taken during these three years. Perhaps the most important step forward was the foundation of the International Centre for the Science of Creatology in Riga, Latvia by university Professors Rita Bebre, Rosella Tomassoni, Golestan Hashemi and Istvan Magyari-Beck in 2008. Many years before the establishment of the Riga organization, this kind of center and even a scientific journal on Creatology was launched by Golestan Hashemi in Isfahan, Iran.

Still more and more specialists in creativity recognized that to have a well rounded domain for studies in creativity – with its own name – was already inevitable. However we are obliged to elaborate on the basics of this new science. The contribution to these basics of the author of this paper till now was the detailed elaboration of the Creatology Matrix – as a framework of studies in Creatology – partially in Hungarian and partially in English, Italian, Esperanto, Latvian and Russian. The following chapters below make an attempt to work out further

basics in terms of creationism and human creation, culture as a self-supporting system, methodological affiliation of Creatology, anthropological foundation of Creatology, normative future, that is programs for creative studies and so on, without which Creatology would lose its scientific basis and sink in the sea of creative techniques based mostly on the probability theory of Universal Darwinism.

The Past

Probabilistic View and Creationism

There are a lot of publications on Creatology where the Reader finds many arguments both for and against the establishment of a new science of Creatology. This problem belongs already to the past. The common essence of argumentations ***for*** Creatology was that originally a huge disproportion existed between the large subject matter (of creativity) and its narrow limitations (even within the borders of psychology). While creativity can be found everywhere: from the "dead" nature, which produced living organisms to man and beyond, for example in the myths and religions, this phenomenon has been pushed into the box of human psychology of productive thinking (Duncker, 1926,1945. Duncker and Krechevsky, 1939). So Creatology appeared at first as an uprising against this prisonlike way of life that the creativity question led to. On the other hand, I could not find any common essence in the argumentations ***against*** Creatology. At first sight, my impression was that most of the enemies of Creatology were afraid of losing the money that the creativity question is able to generate via e.g. the selling of creative techniques.

However, the deeper ideological roots of attitudes against Creatology became visible for me later on. Thanks to the wide horizon of studies in Creatology, we were impressed by the fierce fight of Darwinism for its survival (Koestler, 1971). Moreover some of my colleagues in the United States expressed themselves in a curious way concerning the concept of creativity as such. They were worried about the return of creationism through the channels of creativity as a topic of investigation. We again were confronted with a new disproportion in scientific life. The all-powerful Darwinism is still afraid of its – already defeated – enemy namely creationism and launched two "warships" against it. The first warship was the so called Universal Darwinism which is close to being a religion (Stoelhorst, 2003). The second

warship was a loud fear on the part of Universal Darwinists of the "small" or reduced creativity suffering from imprisoning within psychology. As if creativity were a flask, which contains the immortal spirit of creationism dangerous to Darwinism. Even some of my best Hungarian colleagues announced creativity a dirty word because of its cross-disciplinary meaning (e.g. Englander, 1970).

Now, what is the fateful basic difference between Darwinism and creationism as the alleged ideological background of creativity? Well, whereas Darwinism rests on the phenomena and concept of probability, creationism accepts as actual fact the reasonable way of planning and elaborating things. The conception of probability would win universally if the highest human phenomenon – namely the creation – were explained as a chance event. However, according to our experience, creative work is a goal oriented activity. That is: does a huge contradiction exist between our experience and real happenings? However, it is not allowable to support any exception on the general probabilistic picture of reality, is it? As a result of this approach many theories and techniques of creativity explain and practice this phenomenon accordingly: Any creative process is a blind – mostly semi-blind – idea generation and any creative technique is first of all a facilitation of the latter. Of course, some selection processes are added to this picture. And goal oriented behavior should be classified – for the probabilistic thinkers – as a mere illusion. Two contradictory basic principles in the universe would be the greatest absurd, would it not? Thus one of them has to be eliminated. Let us think!

Intolerance on one hand creates intolerance on the other hand. Creationism is trying to preserve its position at least in human creativity. Even if this is impossible in the environment of probabilistic theories, creationism has to develop its own mirror of the whole universe. We have not yet investigated the history and the fight between these two approaches. One thing is certain. It is not only possible but also sure that the reverse also took place in the past, namely when certain probabilistic events sank in the sea of creationism. Up till now we have three alternatives, according to which (1) everything is either probabilistic or (2) goal oriented or (3) both. How is the latest picture explainable? We can allow two ways in this respect. The first of them is epistemological and regards the two – probabilistic and goal oriented – views as aspects which have nothing to do with each other. The second understanding is ontological and allows a kind of double nature of reality. For example, a great French philosopher and theologian Teilhard de Chardin spoke of the double nature ***of anything***. One belongs to their inner nature – as psychology in the case of people – another to their outer nature. The natural science is interested in the outer nature of the universe (Chardin, 1959). Which is by the way

impossible as reality consists of boxes which contain smaller boxes and so on, in this way, what is outside from one angle is inside from another angle.

Human Creativity and Creation in Creatology

These two approaches (in epistemology) or parts (in ontology) do not bother each other in a number of events or circumstances. However in creativity they do just this. Again the first question can be: Is the phenomenon of creativity a part or an aspect of people? The second and more detailed problem is: Is the phenomenon of creativity a probabilistic or goal oriented activity and does it belong to the inner or the outer nature of man? ***Creativity and creation for us – in Creatology – is a goal oriented inner process.*** Why? Well, it is questionable that we can reach the fine fabric of human mind by our (natural) scientific methods. But if we can, the methods of natural sciences are too time consuming and costly in most cases, provided the person we study is honest and uses appropriate terminology. This is why we do not have any valid definition of creativity from the outside. Secondly, no creator reported the existence of mere chance events in his or her work. However, many of them could tell us a lot about intentional elements both in the goal and techniques of their creative work. There are of course chance events during the process, but creative personality could put them in the service of his intentionality. ***By the way, chance is not an undetermined phenomenon, as this was clarified in the writings of Richard Dawkins (Dawkins, 1991). The chance events – like biological mutations – are also determined as Dawkins maintained. Thus, the actual contradiction exists between probabilistic and goal oriented behavior, whereas there is no contradiction between the probabilistic and determined behavior, as both are the instances of causal processes.***

Why Creatology?

Creatology can be outlined in the following way. This quasi compound word was coined by the present author in 1977 for naming a future science on creativity and ***everything which is and should be connected with this excellent faculty so as to enable us to treat it or rather enhance and improve our ability to cope with the fateful sides of reality (Magyari-Beck, 1976, 1979)***. A single idea generating man-machine alone is nothing. It would be very easy to

invent such sort of machine made of metal and/or plastic. But nothing will be changed by it in the future. For creativity to exist as a large superstructure – of groups (of people), organizations and culture with its civilization-aspect – is inevitably needed. On all these levels, creative functioning has to be analyzed without its "deconstruction" into parts isolated from each other. A kind of well reversible organic analysis gave us three main and mutually interconnected aspects, namely product, process and the ability of creativity. These levels and parts furthermore led to the so called Creatology Matrix within which creative studies can find both their basic problems and solutions to them (Magyari-Beck, 1993). ***In fact, the unit or subject of creativity in Creatology is not the element – the smallest possible up to that time part – of this functioning, but the largest universe of human affairs we call culture and civilization. This is the most prominent difference between the mechanic and organic systems. While the elements of mechanic systems can be found at the end points of analytical process, the elements of organic systems are on their tops.***

The Creatology Matrix is far from being a simple mathematical entity where the strict rules of classifications work. Every square of this matrix contains all the other cells. It is not too difficult to understand this statement if we go from the matrix's top to its bottom. Just for a small example: organizations contain as their parts groups of people, and groups of people contain people as their parts. Thus, organizations contain also the people as the parts of groups. These relations are transitive. Some problems can appear if we take the opposite direction. Again an example: people do not only reflect the groups above them but the organizations as well. Not to speak of the relationships between the groups and organizations. Can the only difference be between the "from top to bottom" and "from bottom to top" that the "from top to bottom" is an ontological relation whereas the "from bottom to top" is an epistemological relation? Even if the answer of YES is already beyond supposition, the net of relationships between the squares of the Creatology Matrix becomes much more complicated after these important remarks. Let us return again to our example! Every organization of every culture contains people as parts of groups who contain the mirror image of their containers and relationships between them. We can also add that these mirror images are not passive pictures of a larger reality. They are both different from person to person and active, which is changing as a result of people's mental and material activity.

The complexity and fruitfulness of the Creatology Matrix has been underestimated until now. It is true, contrary to the fact according to which the details we made use of above are well known not only in the circles of social scientists but also in the circles of the scholars in

general as well. It seems to me that the lack of careful studies in Creatology Matrix is the fruit not of its simplicity but of its hidden complexity. Now we shall turn back to the basic unit of creativity, that is the culture and civilization and continue our paper with the present period. But before taking any step further, the question of "Why Creatology?" and not the psychology of creativity or system thinking in creativity studies (Csíkszentmihályi, 1998) should be answered. ***The reader could see that we changed the main actor of creativity. Instead of speaking of people as initiators of creative actions we regard the culture and civilization as the actual movers of creative solutions. This is why we work on Creatology and only partially on psychology.*** No matter to what extent Csíkszentmihályi's findings are interesting he remained to be a good personality centered psychologist. We also insert here a short chapter on the methodological affiliation of Creatology.

Methodological Affiliation of Creatology

Creatology should be a ***normal science*** which preserves Cartesian logical-rational norms of treating every belief as a hypothesis to be validated by the indicators of truth. These modernized indicators were taken from three aspects of sings – commonly accepted in semiotics – namely pragmatic, syntactic and semantic (Mezei, 1969, Magyari-Beck, 1996). ***Pragmatic*** criterion requires the sincerity of the investigator, who must tell us what he or she actually accepts. That is an investigator should not lie regarding his or her position. ***Syntactic*** criterion prescribes a logical order among the statements of the investigator which makes it possible to explain any statements on the basis of other statements of the same theory. In other words, this is the norm of coherence. No coherence is possible without using logical means for the arrangements of statements. ***Semantic*** criterion demands that investigator uses terms according to their stable – in a questionable discipline – meaning. This makes it possible to judge on the correspondence between the statements on one hand and the facts and relationships among them on the other hand. Here we have to add the ***practical-pragmatic criterion*** as well, which controls the usability and success a science and discipline already achieved and can possibly achieve. If a scientific result is true either only pragmatically or syntactically or semantically its truth is partial and needs a further elaboration.

Logical-rational norms are the common denominators in the realm of sciences and disciplines. On the basis of logical-rational norms we can compare sciences and disciplines in respect to their scope in the virtual space of scientific knowledge and their development in the time

dimension. A Swedish theorist of organization Nils Brunsson arrived at a strange position, which unfortunately became fashionable for today. “Normative research has engendered an increasing consensus among researchers about the kind of decision-making that should be described as rational. At the same time, empirical research has found ample evidence of decision-making processes that appear irrational by the normative standards.” (Brunsson, 1985: 16) According to this author, the movers of actions are expectations, motivations and commitment. “The stronger the expectations, the motivations and the commitment incorporated in the decision, the greater the strength of the decision as a basis for action.” (Brunsson, ibid: 22.)

Although the author of the above citations works on the organizational activity of people, his position was framed as a general theory of human behavior. Nevertheless, it is difficult to appreciate the gap between rationality and activity which Brunsson digs in his book. Firstly, why should expectations, motivations and commitment rest on irrationality? Secondly, there are a huge amount of professional activities unimaginable without strict logical-rational scientific background. Recall for example the practice of medical doctors, technical engineers, economists, and so on. ***Tearing apart sciences and the actions from each other makes the sciences and scientific disciplines and their teaching unnecessary and needless especially in a historical period when the practical-pragmatic success is cultivated. But the sharper problem is the voluntarism in the practical-pragmatic sphere.*** Now the well educated in the history of science readers will understand why I – as the initiator of Creatology – had to fight against the narrow positivism in the last quarter of the past century, whereas today the main enemy of ***normal scientific Creatology*** is the irrational flow of occultist, magic, numerologist, astrological and so on ideas. But this problem belongs to the present.

The Present

Human Beings as Empty Dishes

If human beings were animals our species would be regulated almost totally by genes. But as people have only 2% of healthy genes in their genome – the rest are junk (Watson and Berry, 2003) –, we cannot regard ourselves as animals. Or we were originally really animals sentenced to death by the interplay between our pre-human ancestors and environmental conditions. How could this sentencing happen? And how could we avoid this fate? Let us see

another finding of Watson before answering these questions. The world-famous geneticist found that a lot of animal species also have junk in their genome (Watson and Berry, ibid.). If this is correct, an interesting hypothesis can be formulated, according to which all the animal species could be put in a row from the point of view of their genetic health. On one end of this line, we would find animals with a perfect genome with 100% healthy genes. These species can be justly called gene-machines. At the other extreme, animals with only junk genes would be found. These species are already dead ***except for human beings*** (a genome with 2% healthy genes is practically almost nonexistent). Other animals with a partially healthy genome can be put into a rank order from mostly healthy ones through the moderately healthy to the ill genome to a different degree.

We are not familiar with the evolutionary background of junk genes and their percentages in the genome of different animals. However, we are familiar to a certain extent with the early stages of anthropogenesis. To make a long story short, our ancestors became genetically ill because they could not practice their genetic programs as the speed of environmental changes was higher than the speed of our ancestors' adaptation to it. It is a biological commonplace that any function survives if and only if it is useful and practiced. Superfluous functions die out as a rule. This happened to the pre-human genome. On the other hand, biologists are reluctant to accept that junk is junk in biology and try to find the usability of allegedly junk by the human organism. Accordingly, a lot of hypotheses were elaborated for proving the gene nature of this junk. One of the hypotheses is that ***"Increasing evidence is now indicating that this DNA is not "junk" at all. Especially, it has been found to have various regulatory roles. This means that this so-called "non-coding DNA" influences the behavior of the genes, the "coding DNA", in important ways."*** (Suurkula, 2010) That is can we think that 2% of healthy genes are regulated by 98% of a kind of certain meta-genes? This is difficult to understand. We do accept that the structure of the genome is hierarchical. However, the proportion of 2 (soldiers) vis-à-vis 98 (officers) reflects a pyramid built upside-down. This state of affairs needs appropriate explanation or at the very least an explanatory hypothesis.

It is more possible – in qualitative sense – that the officers switch on and/or shut down not the inherited functions of human organism but rather the learned ones. If this is true then these junk genes give the biological basis of culture preserving, in the meantime, the roots of fundamental human nature. ***Culture – in this understanding – is a substitute for biological genes which died out in the process of evolution. Another definition of culture can be the following statement: Culture is a kind of virtual genes which were – and still are – worked***

out in the process of learning by people so as to be able to survive as a species. As far as human nature is concerned, it will perhaps be found in the so called junk genes. One of the questions is: Whether culture is ***a*** substitute or ***the (only)*** possible substitute for biological genes which died out during anthropogenesis. The valid answer to this question will determine our behavior vis-à-vis the culture. If culture is the only substitute for dead genes we should preserve it at any cost. However, if culture is only one of the imaginable substitutes for the above mentioned genes, we can refuse it and select better ones, provided we have already invented those new substitutes.

It is high time to summarize our position concerning human nature. We have three interconnected conceptions in order to elaborate a more or less valid solution of this very old problem. If we take into consideration the lack of healthy biological genes to an extent of 98%, human beings must be defined metaphorically as empty biological dishes. That's true. If we take into consideration the function of junk genes as it is outlined above, human nature must be defined as something which exists but has not yet been discovered. That's also true. Finally, if we take into consideration the necessity of creating and appropriating something for the substitution of the absent part of the genome, human beings must be defined as creative systems. That's again true. By the way, if we are not satisfied with culture – as this can be very likely on the basis of aggression which was and still is directed against culture by fascism, counterculture, personal or market dictatorships and so on – we can replace it by other forms of gene substitution. The only obligatory proviso is to preserve those ***more basic principles of gene substitution*** which were first "discovered" or "invented" by culture and civilization. Any new trials should be the special cases of those "more basic principles of gene substitution" which have not been explicated yet. This requires substantial studies in culture(s) and civilization(s). As far as I am concerned, I would preserve the culture in its original role of producing a tolerable number and good quality level of human beings. However, I know that the specific features of culture and civilization as such would become clear if the other forms of gene substitution were discovered or invented. But keep in mind that this experiment is very dangerous and can be fateful for the existence of mankind.

Creativity in Culture

The traditional view of creativity maintains the position common in scientific psychology. According to this view, it is the individual personality that creates by making use of its

faculties. I would propose another approach to this problem. ***In my understanding it is culture which forces people to create.*** Culture became a living organism which was born in the open from the genetic point of view "flower-cup" of pre-human apes. But culture has never remained an individual property. Culture has always been a common good from its very beginning because the pre-human apes – as we also know – tended to imitate each other as the individuals of any species of apes and monkeys. We can suppose that every act of imitation was accompanied by certain changes (mutations – if you wish). Those changes made the repetitions of actions either better or worse than the imitated were. After a while a whole set of successful actions found its place in the ape's memory and started its autonomous way of life as a system of actions. We can rightly call them: skills. Unsuccessful actions were in due course, forgotten.

This position is very close to Craig B. Stanford's one: "The topic that day was culture, and I offered my perspective as a biological anthropologist with a decade of field experience studying African great apes. Chimpanzees, I began confidently, display a rich cultural diversity. Wild chimpanzee populations differ – or so I was about to continue – more than just in their gene pools. I was prepared to describe how different chimpanzee groups have distinct cultures, comprising unique assortments of learned traditions in tool use, grooming and hunting styles, and other features seen only among the most socially sophisticated primates." (Stanford, 2000: 39) Stanford – in the above citation – described the starting point of one of his presentations on culture in the circle of specialists in this topic in Rio de Janeiro in 1996, where he outlined his position regarding the culture. I basically agree with his conception. The most interesting aspect of this definition is that according to it ***the early stage – the beginning – of culture is at the same time its essence as well.*** Here we shall not analyze the differences between the man's and chimpanzee's proto-culture which surely exist.

However, in our terminology, traditions are almost the same as skills. The only difference between them is that whereas skills refer to individual activity, traditions are the common activity of larger groups of individuals. Skills are created, improved, multiplied, accumulated and systematized in the process of their development. After a rather long period of cultural progress, it was impossible to fix in memory and imitate single skills one after another, because socialization required the possession of systems of skills. How could the early man know which skills are close to each other and which are not? Secondly, how could the early man pass a system of skills to another man or another generation? One of the answers to these questions can be that via the coining of different names – as carriers – for different systems of

skills. As the systems of skills can also be similar to each other, new names for indicating the more abstract relationships among the systems of skills were required, then for the systems of systems of skills and so on. Thus, we arrived at the hierarchical structures of terms, which reflected the hierarchical structure of skills. Well developed cultures emerged well before us as autonomous systems of activities and names. The imitation was replaced by learning and education.

It would be possible and even necessary to further investigate and describe the way cultures took their shape not only on the concrete and abstract levels of human behavior but also concerning their factual and normative statements. ***But this time we are interested in those holes – empty places – which every culture has within its topological space. Why are we interested especially in these holes from the point of view of Creatology? As a matter of fact, these holes are the stimulators and movers of creativity. Creative activity has always been the actual filling in of these holes. The problem is nothing else than the definition of the empty spaces. This is why we cannot find any difference between problem solving and the act of creation.*** According to a famous Hungarian drama – "The Tragedy of Man" by Imre Madach, from the 19th century – even God was forced to create the Universe by the emptiness which represented the evil. In this respect, the evil is the stimulator of creativity and – on the other hand – creativity is the fight against the evil. By the way, many times, the holes in cultural space are great disadvantages because they can prevent the healthy self-regulation of people in that culture and likewise their healthy regulation from outside, e.g. by their managers or bosses.

Thus, creative functioning or problem solving develops cultures via the reduction of both social and psychological anarchy and via the improvement of their inner coherence. Without creativity any culture will die, as the holes also tend to expand and undermine the already solved problems. ***The only means against the expansion of emptiness is the expansion of creativity. This theoretical model explains the value of culture. Culture is the question of "to be, or not to be", since without culture no human life is possible.*** Those peoples who gave up their culture died out. Those peoples who were deprived of their culture by any sort of force also died out. And these kinds of things are still happening in our days. The whole world is a considerable experimental laboratory for the studies in culture, especially today. Globalization is a dangerous idea, if it requires making all cultures uniform and/or creating the same culture for everybody. This idea involves the greatest possible discrimination, for only those societies will survive in the process of this globalization, which can meet the

requirements of the global predatory culture. In all likelihood, the survivors will be those peoples which force all the other peoples to accept the culture of initiators. These things can happen usually by rude military power.

Creativity in Personality and Beyond

The holes in cultures attract people to cover them with solutions so as to make the people's self-regulation and their regulation on the side of organization and culture smoother. It is true that no person can represent his or her culture in its entirety. Every person is in fact a subculture that is a part of the whole – non-genetic – program. It is also possible that people have their own subjective holes because of the lack of sufficient erudition. The cheapest medicament in these cases is further learning. ***But if somebody finds holes which are characteristic of the whole culture – that is exist objectively – and tries to cover them with solutions, this "somebody" can be rightly called a creative personality.*** On the other hand, we all are creative because of our capacity and methods of thinking. Take into consideration that even the subjective holes can be covered creatively – that is without traditional learning – if the subject discovers the solution instead of appropriating the relevant curriculum. However, not all the creative activities lead to real creative product. Only the covers of objective holes in cultural programs deserve the name of creative product in every respect. Although we can cover our subjective holes creatively, as usual, these covers will only be subjective creations. As a matter of course, somebody can learn useful solutions in other cultures and transfer them into his or her own culture. This frequent case can be creative only as far as the transferred product is concerned, however, not from the point of view of the process which was rather traditional learning than creation (Magyari Beck, 1997).

The point is that – so as to be a creator objectively – one should find holes which are common for everybody in a culture. Unfortunately, not all the specialists, thinkers or actors have the capacity and/or courage to start covering them. We are able to express this statement in another way, which sounds more familiar for today's men: Namely creativity is a question of the common need of people and its satisfaction within and by their culture. This is why catharsis is an important issue in arts. ***Those pieces of art which end by catharsis are the proofs of that culture's ability to solve their problems. The lack of catharsis speaks of the inability of a culture to solve its problems.*** Creativity is not only a question of mental capacities but also that of the character of personality. Creativity in this sense needs first of all

typicality and conformism (a creator should stick to his or her own culture), secondly, ***deviance and originality*** – recall the conquistadors and seamen of the period of great geographic discoveries in the 15th and the 16th century, who filled in the gaps in our geographic knowledge of Earth –, and finally, the ***lack of psychological balance*** which makes a person sensitive to the holes: problems of self- and general regulation (Magyari Beck, 1988). I was told by Csíkszentmihályi that sensitivity to problems is the only indicator of creativity as a human ability which has predictive validity (Csíkszentmihályi, 1988). I totally agree with the above statement, however, only with an addendum, according to which not only people should have these abilities but – mutatis mutandis – also groups and organizations. Not to speak of the culture itself and its self-reflection. These are all the necessary but not the sufficient conditions of creative solutions. Sufficient conditions are the appropriate cultural values and institutions, sensitive organizational structures and rules of work, good and opened psychological climate in groups, and – finally – mental and physical skills, capacities of people in the domains where cultural holes had to be covered, that is the problems solved.

As we are Creatologists, our duty is to see and show how a culture maintains itself through its parts – organizations, groups and people – which serve as the means of completing it. Here the point is that covering the objective holes in culture is a rewarding activity since the rules of game become more complete and coherent. The more complete and coherent a culture is the more dynamic and smooth the happenings can be there. And vice versa: the less complete and coherent a culture is the worse the dynamics of happenings could be there. But if a culture is totally complete and coherent – that is closed – creativity can find no way in it. Thanks to God or the Nature this overripe level in the universe of cultures is nonexistent and even impossible. Cultures die in two ways: Either because of another – more powerful – culture's aggression or because of the attacks from inside. The latter happens again in two ways: Firstly, because of the lack of creativity on any level, which prevents the covering of cultural holes. Secondly, cultures will die if they approach the level of overripe systems. Culture is not a machine and cannot be a machine. It has to be open in a number of directions. Freedom as the socialized form of the deepest human nature – that is anarchy for the lack of a healthy genetic program – looks for its way of channelized manifestations. Not to speak of the fact that culture is a big system far beyond a strict and narrow determination. Any form of cultural catastrophe kills the people who are its members. The massacre of American Indians

happened sooner by the killing of their culture than by the armed forces of Western Europe and white America.

The Future

Empirical and Normative Future

One of the most important tasks of Creatology is connected with futurology. In the science of futurology, there exist two kinds of future namely empirical and normative. ***Empirical future*** consists of all possible and predictable events which can occur if we do not make any steps of restructuration – that is redistribution – of probabilities attachable to these events one by one. But people have culture which we defined as programs, thus our relationship to the future is by no means passive. By the way animals – under the influence of their genes – are also sensitive to the changing of e.g. the climate, to the threat on the part of their enemies, to the geological disasters and so on, and many times can take actions against them. Sometimes they cannot do anything except for raising their physiological level of activity, that is, excitement in order to be ready to escape from or attack the harmful factor. These types of behavior are much more developed on the level of mankind, first of all because of man's possibly highest vulnerability to hostile occurrences. ***People usually work on the redistribution of chances of possible future events consciously. That is, they elaborate a normative future***: ***a future acceptable from the point of view of people's survival.*** The careful programs, compiled by people, surpass the animals' caution many times.

The success of cultural programs worked out by people is a function of both the correctness of our predictions of the empirical future and clarity – and/or adequacy – of our values and goals. It is frequently said that futurology is not a normal science, as it has no facts to study because all the attention is turned to the future, and thus, the facts of futurology are only possible or virtual facts. We, of course, do not share this opinion. ***The facts of futurology are those problems that need to be solved today***. ***One of the parts of these problems is the events of the empirical future, which are to be discovered today by the studies in the so called intact future. The future is intact if we have not yet started the redistribution of probabilities of either discovered or undiscovered future events (which is also possible via***

the semi-blind actions of intuition). Other parts of these problems are the values and goals we accept as valid for the future. Normally, all the sciences deal with problems and have an aspect of futurism as they work on our future. Only the positivism tried to reduce these problems to the allegedly positive facts. What in fact are the positive facts? The word "positive" can suggest a certain answer, according to which the reality and value are the same things. My supposition is that this idea originally came from Leibniz for whom this world is the best of all possible worlds. By the way, this idea was picked up by Charles Darwin – perhaps not consciously – and elaborated in his theory of biological evolution. However, the Universal Darwinism generalized this view of Darwin pushing it even closer to Leibniz's idea. The only remarkable difference is that whereas Leibniz was a creationist and explained his position touching religion, Darwin was a materialist in his work and explained "his" position by using a qualitative probability theory which has been developed further by Richard Dawkins among many others (Dawkins, 1991).

The Mania for Pouring Innovations

While Creatology also has a problem-centered view just like futurology, the mania of pouring innovation can be a hidden form of destruction. Basically, destructions have two directions. One of its forms simply uses deconstruction is the sense of eliminating a structure after which the former parts become ruins. Another form of deconstruction is the abandonment of the structure sentenced to destruction and building a new structure which claims to fulfill the function of the abandoned one. If the new structure can meet the same function in a better way, we call it development or the starting phase of the process of creative destruction. But if the new structure works worse than the previous one the whole process is merely destructive. It follows from the above that not all innovations can be instances of development. In a number of cases innovations serve as a means of destruction in the disguise of development. This occasionally happens in Europe now, where and when the national and ethnic cultures are regarded as obstacles on the way towards the united culture of one United Europe. Our view of this process is: If we actually need one United Europe, the building of a better and continental culture should be established before the destruction of the European national and ethnic cultures. The amazing speed of creating the national cultures in Europe in the 19th century can be explained by the fact according to which those cultures were almost ready. They had common languages, common religions, national

arts etc. and only the historical obstacles had to be eliminated. Now the process is the reverse. At first, we "build" a cultural Sahara via replacing national cultures by a common technical civilization accompanied with the human and social engineering, and then are waiting for the filling in the cultural gap we have already dug. This method is an absurd. As Freud showed in his bright writings many times, only those problems can be conscious and consciously solved, which are not extremely difficult. As for the extremely difficult problems, we as a rule suppress them. In brief, creativity as problem solving is far from being totally identical to innovation. A lot of times, they are the same. See for example the works of Pasteur, Koch, Leonardo, Aristotle, Plato, Einstein, Heisenberg, and so on. At the same time, we frequently have creative results without innovation. See for example the numberless Icons of Orthodox Church. Likewise, a lot of innovations have nothing to do with Creativity. See for example a number of innovations in today's education which results in ignorant new generations.

Creatology and Other Studies of Inventions and Discovery

Creatology is not the very first attempt to establish a new science of creation. Originally, the ancient Greek thinkers tried to develop a discipline based on discoveries and inventions. This discipline was really developed later on in the 20th century and got a name of Heuristics. The main developers of modern Heuristics were George Polya, a Hungarian mathematician who worked in Western Europe (Polya, 1945, 1962, 1965) and Herbert Simon, an American (USA) economist, computer scientist and psychologist. Another path is the Science of Science promoted mostly by John Bernal. A new quasi-discipline of Innovatics emerged from the Schumpeterian term of innovation, that is, from economics. All these disciplines have many understandings and interpretations. Creatology has a larger scope than Heuristics because Heuristics concentrated first of all on the psychological and computer science aspect of creativity. Creatology also has a larger scope than the Science of Science as it is interested also in other genres of intellectual work. Among others, we are substantially interested in such domains as the Economics of Arts and Culture. Creatology has a larger scope than Innovatics as novelty for it is only one of the ingredients of problem solving. Many times, we solve problems by returning first to past solutions. Old paradigms reappear again and again if they are what Jung called archetypes. Well, Creatology does not intend to win in this race. ***Our mission is simply to maintain the interest towards the complex phenomena of creation which is all the more possible by means of science as creative jobs became common in***

practice, and creativity is not any more an exception or a "private property" of any kind of elite. Thus we can search for its common laws, rules and their manifestations and conscious – goal oriented – applications. Not to speak of the nurturing of creativity and making it more preferable for groups, organizations and cultures. Creativity is the only weapon accepted by Creatologists.

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A Remark

Creatology is the newest trial to establish a discipline on creativity and its conditions, processes and consequences. This science was born as a conference paper of the present author in 1977: ***About the Necessity of Complex Creatology*** See in the Bibliography of this paper. The mission of this new science is to again lift the creativity question onto the level of its original complexity. Creatology intends to grasp the creativity question beyond and above any particular social system and regards creativity as a self-defense of cultures against destructive forces which could kill their members via killing the cultures.