Creatology

Brief Notes on a Possible New Science of Creativity

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Preface

The subject matter of this work is Creatology. Now, what is its unique nature in the vast sea of papers which try to solve the mystery of creativity? Well, the author of this work returns to the original preference for complexity without sinking into the ocean of facts, hypotheses, theories, and so on. *If we were to make a survey of today’s scientific achievements and conceptions related to human beings and their social environment we would see a revival of the famous philosopher’s stone in the disguise of verbal statements. Briefly speaking I mean by philosopher’s stone a few simplified theses which claim to explain almost everything in their domain.* This practice rests first of all on the value of being economical in the process of intellectual model building. Moreover it seems to me that being extremely economical in research thinking has become the main value in today’s investigations. Thus the best thing of all would be to explain everything in a single – or a few – simple words. This sounds incredible.

For example I recognize that the notion of *mutation* – that is, change – is a very important concept, but it is impossible to explain all the varieties of life and inanimate matter by the random changes of things and ideas (in the framework of universal Darwinism which is the leading ideology today, at least in the West). Another side of this coin is *selection*. This process has never yet been explained in detail. Is it the disappearance – or in the case of living organisms the death – of mutating units, which do not fit into their environment? What is *adaptation*? Is it a process taking place within individual organisms (that would be Lamarckism explainable on the basis of gene mutations and selection) or a process taking place in species where the unfit organisms die out (which would be the biological version of traditional Darwinism)? *Great minds are dealing with these options and create excellent algorithms – designs of processes – of evolution, at the same time rejecting any kind of creationism and design.*

We are also familiar with some psychological theories, like flow which is beyond doubt a wonderful postmodern metaphor again explaining a huge amount of facts: happiness, creativity, hobbies, motivations at work, psychological health and so on. The problem is that this theory has a more complex and more interesting ancestor, namely the so-called *whirlpool theory of personality* developed on the basis of psychoanalysis many decades ago. The
only difference between flow and the whirlpool theory of personality is that the latter also identifies and accepts the obstacles which prevent the flow from continuing its linear course. These obstacles can be the superego, reality principle, motivation, abilities, given circumstances, energy and so on (Freud, 1920). These obstacles as a rule turn back the flow and give it a circular shape which can sometimes be extremely unpleasant or even tragic self repetitions for the person who—in this process—loses his psycho-physiological balance. Thus flow can be regarded as a simplified and enjoyable special case of the whirlpool motion of man’s psychological life which is, by the way, full of conflicts.

Although we can rightly appreciate these economical attempts at reasoning and find them very useful in many cases, Creatology is a modest enterprise, seeking to find and explain the complex phenomena of human creations. The whole history of mankind has been huge chains of men’s creations. So as far as the central facts in Creatology are concerned, they are the creative results. The most important question is how to identify, evaluate and explain them. However on the level of explanation we do not have just one or two main or exclusive or necessary concepts which would make our enterprise conspicuously economical. The philosopher’s stone is an outdated norm of outdated alchemy for us. The most economical enterprise for Creatology is the valid and reliable identification and explanation of creative results. Of course we also coined some important terms like Creato(PATHO)logy meaning the lack of constructive reasoning, Creatology Matrix meaning a framework for the facts Creatology is interested in, Creatology itself meaning the structured sort of the interdisciplinary sciences of creativity, etc.

But let us put the emphasis on the understanding of living creativity rather than on the innovations in vocabulary. Is this small goal pardonable or is it inexcusable? Should we inevitably build impressive models? I do not think so. I am interested in reality and not in science as such. Science— and especially scientific method— can only be a tool and nothing more. This is my credo. Forgive me. We will pay special attention to the value of truth. Why? Because the historical facts show that it is not the mere success, popularity, immediate acceptance, number of works (e.g. papers), career, position and so on that count but the truth which survives all the hardships of life. I am familiar with the theories of negation of truth. Yes, truth is a very complex phenomenon wherever the symbol systems exist. But we should not deny something simply because we are frightened of its complexity. It is much better and advisable to
accept the challenge and meet it with solutions. Thus, we shall turn to *the tests of reality* instead of success, popularity, acceptance, position and so on.
1. Introduction

The problem

It is quite natural to start a work with the problem to be solved at the end of the same work. The subject matter of this paper is creativity. Creativity is perhaps one of the most fashionable terms in the 21st century, as if people believed in a religion where Heaven is the future. This identification of Heaven and future can also be observed in the reduction of creativity to innovation. This is the biggest of all mistakes in our domain. Let us go into some detail of that position. According to today’s mainstream in the sciences of creativity the unit of creative results is the idea, the unit of creative act is idea generation. But this is only the supply side of the matter. The other side – again in terms of economics – is that of the demand which – in the studies in creativity – we can call the selection of appropriate ideas. Appropriate for what? Normally – we would think – for the problem to be solved. However this statement seems too well structured for many scholars in our field. The so-called divergent problems – celebrated by Guilford as the type of problems which stimulate creativity – are frequently only values or goals (Guilford, 1987. pp. 33-65). What we call problem in real life situations is closer to the convergent structures, but not necessarily convergent or even exact as Csíkszentmihályi maintains (Csíkszentmihályi, 1990, 1998).

Don’t think for a moment that the outlined approach is a baseless speculation. It rests not only on an economic model but also on the well elaborated theory of neo-Darwinism, where genes are the protagonists. It is the genes which are permanently changing – mutating – and thus creating a lot of mistakes (!). These mistakes should of course be selected – mostly eliminated – otherwise the living organism will fall ill or die. So the living organisms fulfill the role of first selector. This game is that of survival in face of attacks from both the genes and environments. Thus selection is rather the harmonization of external environments and internal mistakes of the organism. The living organism is permanently improvising so as to remain sustainable. Unfortunately there is a big distance between the phenomena of creativity – e.g. of Leonardo, Giordano Bruno, Machiavelli, Einstein and so on – and the biological harmonization of a living organism. This problem has been solved by Dawkins who coined a new term, memes (Dawkins, 1976). Memes – which were defined by Dawkins as the units of culture – work exactly like the genes: they are programs, memory,
mutating (that is creating mistakes), selected and so on. But – to the best of my knowledge – Dawkins could not connect the genes with memes. The theory of memes is rather a metaphor – an analogy – of genes. Not to speak of the fact that we still do not know what the units of culture are: a paper, a discipline, an art, an idea (as in creative studies), a finding, a discovery, an invention, a book and so on and so forth.

Although Dawkins is a popular scholar, many scientists reject the concept of meme. For example “Luis Benitez-Bribiesca, a critic of memetics, calls it ‘a pseudoscientific dogma’ and ‘a dangerous idea that poses a threat to the serious study of consciousness and cultural evolution’ among other things.” (“Memetics”, Wikipedia). I can see for the time being only one way out of this qualification, namely the connection of memes with the texts of genetic programs within us. 

But the disproportion concerning the complexity between this approach and the actual facts of creative products, creative process and creative ability studied by the methods of standard social sciences is more than alarming. As far as I am concerned, I started to study creativity – without being familiar with the early works of Dawkins – in the same year Dawkins published his book “The Selfish Gene” in 1976 (Magyari Beck, 1976). However, I started my investigations into this domain with creative products on the level of cultures and civilizations. I was interested first of all in the real facts of scientific discoveries and inventions. On the basis of this investigation and analysis, I could formulate a definition of creative products in sciences and disciplines. The perspectives of these studies seemed to me wonderful and attractive. I could not avoid the conclusion that it would be very important to continue these real life studies by creating a new science for studies in creativity. In one of my papers from 1979, I named this science Creatology. This paper was originally a presentation at “The International Sociology of Science Conference” in Budapest in 1977 and published in 1979 (Magyari Beck, 1977). In this work I will summarize certain further aspects of Creatology which I have not previously published.

The current status of Creatology

Creatology is a new interdisciplinary science. This science has a lot of enemies but also a growing number of supporters. One thing is certain: the term Creatology has already spread all over the world. However, to tell the truth,
almost every user of this term uses it in a special way characteristic for him or her. Creatology seems to be a heterodox and multi-paradigmatic science which is developing right now in its divergent phase (Magyari-Beck, 2007, 2008). Some supporters even describe it as the science of – or for – the 21st century. Why not? Problem-solving activity has become not only necessary but popular as well. Most people now work in jobs which require a high level of creativeness. This also means that the life and work of people today cannot be understood in terms of only skills and routine. The only way to understand them is via the concept and laws of creativity. It is true that an absolutely exact, exhausting and final theory or framework of Creatology has not yet been worked out in minute details, but we do have quite a few preliminary conceptions. And the need for this science is more than clear: the interdisciplinary nature of the domain (creative products, creative processes and creative abilities), the interdisciplinary nature of the field (investigators and practitioners of creativity), the multilevel nature of subjects, communities and markets of creativity (persons, groups, organizations and cultures).

The central phenomenon of and demand for Creatology

Let me first clarify the central phenomenon we study in Creatology. I will also try to explain why we cannot avoid the establishment and elaboration of this science. (1) Well, as far as the central phenomenon of Creatology is concerned it is creation as product or process, and creativity as ability on the levels of cultures, organizations, groups and individuals. This author has to warn the readers that the units of our studies are not the easily countable single ideas which is such a fashionable view and method today, but solving the serious, difficult problems thanks to which the complex systems – first of all the cultures and civilizations – can survive. I acknowledged at the very beginning of these “Brief Notes” that for me novelty is far from being the most important issue in the studies in creativity. However it is a matter of course that without innovations, in most cases cultures and civilizations are not sustainable.

Like most people, I am interested first of all in the maintenance of cultures which can be done only by a huge amount of successful problem-solving, which frequently – but not necessarily – contains novelties as well. That is, the traditionalist way of thinking can also be a very creative reasoning. Moreover, by serious problem-solving I mean those results which are embodied in quality
books, operas, buildings, scientific discoveries, sculptures, technical appliances, inventions and so on. To identify a result as creative is as a rule a difficult and time-consuming job. There are of course phenomena which can be called micro creativity: the solution of miniature problems of everyday life. But they certainly cannot compete with the powerful results of brainwork. To find the key ideas within any creative results requires a careful analysis of these results.

My favorite example of creativity is the historical period of the Renaissance, when Italy had to cope with the Islamic influence and by adopting a lot of the results of the Islamic mind, it was able to preserve the European spirit of that time for centuries. What kind of results did Islam have in the 12th century? Well, Islam was a market economy. Islam was a religion of the poor, which could not be said about the Christianity of that period. Islam had discovered the wisdom of ancient Greek philosophers. Islam had a wonderful textile craft and so on. In a word, Islam was a powerful competitor of Europe in the Middle Ages. This problem – that is, the preservation of European culture – was solved first of all by Italy which adopted at the least the brilliant textile craft, a monetarist market economy, the philosophy of ancient Greece and Rome. The only thing Italy rejected was Islam as a religion. Italy preserved Christianity – the main ideology in Europe in the Middle Ages – by creating excellent art which emphasized the beauty of this religion. Beauty – although it may be different in different historical periods – is an important feature of goods – whether material or spiritual – for the consumers of market economy.

This example can be analyzed further, but let us continue our theoretical train of thoughts with another example. Imagine that you are a biologist. It is a matter of course that you are interested first and foremost in animal or plant species and also individual animals or trees for example (especially trees which are for us sacred plants because forests were our original evolutionary niches). In the process of investigation you will analyze them and discover important parts of their bodies, cells, functions, forms of behavior, etc. But if you start by studying the smallest parts – e.g. cells – of an animal’s or plant’s body, a chaotic world will appear in your microscope, at least in the beginning. Even the functioning of an individual of whatever species is not understandable without careful investigation into its environment. *It is almost ridiculous that the recent studies in creativity started their historical career by searching for the single – often unimportant – ideas of average people.*
(2) Our second question was: why do we need a properly framed discipline for creative studies which is more than the interdisciplinary science of creativity can be? It is easy to answer this question despite the fact that many scholars of this field pretend ignorance concerning this problem. Here I would like to remind my colleagues of the terms divergent and convergent thinking, two conspicuous terms well known in the circles of today’s creativity scholars. I will nevertheless illuminate these terms by a metaphor. Any creative enterprise works and develops like the heartbeat. The process is started by the enlargement of the heart so as to allow the blood in. This is the pull phase. The next phase where the blood is pushed out of the heart is naturally the push phase. The same happens with creative brainwork. At its beginning we gather all possible, accessible and relevant knowledge and information. But later on, we restructure the material and give it a new quality and arrangement. And we do this repeatedly. Do not forget that a metaphor is only a metaphor!

Even the idea-centered studies in creativity accumulated a lot of knowledge in the past. Incidentally, there were scholars who studied creativity far beyond the dull ideas of average people (e.g. Csíkszentmihályi, 1998). Thus, it was high time to formulate a theory or framework which could serve as a mental box, a system for the data gathered in the divergent (pull) phase of investigations. The so-called four P’s (Person, Process, Product, Press) of Mel Rhodes, widely used – especially in the United States – cannot be regarded as a theory or framework of creative studies, as they are together only a small and poor set of four important notions without a well structured logical order (Rhodes, 1961). It was also clear that the needed theory or framework had to be interdisciplinary as the search for good conditions of idea generation gave as a result a number of factors far beyond the psychological ones. We will see later that it was the science of psychology which won temporarily in the competition for the cultivation of creative studies. These considerations led me to the concept of Creatology and Creatology Matrix: Creatology as the name of the interdisciplinary domain of creativity, Creatology Matrix as the first framework to introduce a conceptual order into the domain in question. This history was described by Magyari-Beck (Magyari-Beck, 2007, 2008).
The name Creatology: for and against

Creatology as the name of a domain did nothing more than replace the name of the Science of Creativity, or to be more exact, is trying to replace that name. This attempt is still under way. Then what on earth can be wrong with the name Creatology? I could figure out a couple of possibilities. (a) The name “Science of Creativity” reflects an ill-structured domain from which the creativity question can easily escape back to psychology, where some creativity scholars feel more comfortable (perhaps because they were psychologists originally). Psychology is a much better structured science than the Science of Creativity no matter what a narrow niche it offers for the creativity question (the so-called productive thinking). Creatology does not allow this kind of escape because of its name and the well structured interdisciplinary nature of the Creatology Matrix. Neither the subject matter nor the organizations of Creatology can return any longer to the one-sided psychological past of reasoning in the creativity question. This makes many psychologists covert or overt enemies of Creatology.

(b) Creatology also contains those parts and pieces of creative studies which were developed before we coined the term Creatology and excludes only those portions of “studies” which were conducted by pre-scientific methods – like occultist and spiritualist ones – and so do not belong to the normal sciences, where proving or refuting the hypotheses is an unavoidable and obligatory step. Or to be more exact, Creatology is interested in such “crazy” pre-scientific forms of consciousness but it takes them just as the pools of ideas and methods of idea generation. Not to speak of their importance from the point of view of general cultural history (or cultural evolution as universal Darwinists prefer to say). So it is no wonder if the serious creativity scholars who conducted their studies under the banner of the science of creativity are suspicious of any “colonization” of their investigations. This is why even the first framework or theory of Creatology should be as wide as possible.

How does a normal science develop?

Normal science is that kind of science which proves or disproves its hypotheses. Doubt is an everyday feeling a scientist faces when he is confronted with a statement new for him. Creating, confirming, systematizing and accepting the statements (whether qualitative or quantitative or both) – are the main steps of a normal science. Of course we have an enormous number of methods of
creation, confirmation, systematization and acceptance (CCSA – if you wish). Now, in this period of creative studies, the key point for us is the step of systematization. Systematization inevitably needs and leads to a kind of framework. Let us suppose that this initial framework or theory is almost full of facts, which is not true for the studies in creativity. Usually the scientist’s work does not end at this step. The scientist will continue hunting for facts. And if he is successful the new fact either already has its place in the initial framework or theory or – on the other hand – will fall beyond the original scope.

If the new fact’s landing strip is situated beyond but not too far from the heart of the original domain, then a wise discoverer will generalize it in a way which creates a larger framework or theory which contains not only the new discovery but the first and initial discoveries as its special cases as well. But between the initial and the newly established borders, the mental “airport” is virtually almost empty. So the next job of scientists will be to find as many new facts as possible to fill this gap. When the new framework is almost full of facts, the task of creating an even larger framework or theory appears on the scene and so on. Although novelty is only one – and not the most important – feature of creative results, here I nevertheless speak in terms of novelty because the identification of creative product and novelty is such a deeply rooted false stereotype by which it is easier to demonstrate many, otherwise important points.

How does an abnormal science develop?

What is the most important component in the above-outlined process? Well, the borders themselves. Any new result must fight for its survival following two ends: firstly it should evidence its being a novelty, secondly it should evidence its belonging to the domain (that is its being old vis-à-vis the already familiar facts). And this is a contradiction which can be resolved in the process of fierce fight. The sources of dramas in creativity can be found exactly in this contradiction. Unfortunately the postmodern view and methodological anarchism try to save these efforts by giving up theoretical frameworks and theories, that is, the borders and limitations. As if the latter oppress the free flow of thinking. And by doing so, they eliminate important tests, which were the cranes lifting science from the level of superstitions to that of the spaceships. Often empty speculations occupied the places of scientific theories and frameworks. This is especially true for the social sciences and humanities.
Natural sciences – to the best of my knowledge – haven’t given up their historical wisdom.

However the proliferation of facts is still continuing in all sciences and humanities. But as they cannot influence the process of creating new frameworks and theories, strange pictures emerge before our eyes. Namely old and semi-destroyed castles of theories and frameworks built on the basis of outdated facts litter the scientific battlefield almost everywhere. Their terminologies are also outdated as we discussed the issue with my PhD students at the Corvinus University of Budapest. An enormous wilderness of disorganized facts grows around these castles without the slightest hint of any kind of time sequence and topological order. How many new but hidden frameworks and theories could be found or reestablished by a diligent investigator within this wilderness for each castle! If this virtual diligent investigator were able to put all these frameworks and theories in a time sequence and topological order, a wonderful picture of scientific development would be discovered for each castle. But in what way could the hidden – in postmodern view – history of scientific development be reconstructed?

Otherwise we are given the false impression that these old theories and frameworks are so perfect and classical that no theoretical work is needed in the future. The set of facts is constantly accumulating but no deep theoretical comprehension accompanies that accumulation. See for example the science of economics. This and many other disciplines play on two instruments: one of them produces the symphony of stability of basic theoretical models, the other radiates the music of – mainly factual – development. However even the well educated specialists in these fields have failed to notice that there is no connection between the basics and the newly discovered facts. Thus we have on one hand freezing ideologies (instead of theories and frameworks) and on the other hand stormily developing facts without clear theoretical relevance (e.g. in the economics of culture). This state of affairs can be called a crisis situation. *Now, we are trying to guess why the creative studies in Euro-Atlantic culture started not by scientific investigation into creativity but by inventing creative functioning in the spirit of human engineering. Perhaps as there exists now a great multidimensional and multilevel crisis almost everywhere in the world we have no time for careful scientific investigations into creativity? Keep in mind that only a scientifically valid and reliable theory and practice of*
creativity can help us. “Pseudo scientific dogmas” will rather shut the doors of further historical progress out of crisis situations.
2. The Necessity of Human Creativity
An Anthropological Explanation

Are we human beings gene machines?

Many thousands of centuries ago people were already aware that they were relatives of animals, well before the works of Charles Darwin. So – from the scientific point of view – the actual problem was not with our commonalities between us and animals but with the specific features of mankind. Thus the great scientist Darwin speaking of and writing so much about these commonalities chose the simpler and easier challenge and neglected the more difficult one. Now, it would be our task to solve this problem in this century. The first answers to the question of our specific features were descriptions of clearly visible human phenomena like verbal language, means of production, work, reason, creating an artificial environment and so on. However, the common roots of these achievements remained hidden till the genes were discovered. But almost immediately after their discovery biologists decided to use them as an additional argument for the identity of men and animals. Some authors are speaking today of people also as gene machines (Richards, 2000). But genes are important from another point of view. It is not the existence of genes but their absence that matters in the problem we are trying to illuminate here.

What kind of machines are we human beings?

A still valid discovery by a famous geneticist J. D. Watson shed light on this age-old problem (Watson and Berry, 2003). Watson found that only two per cent of the human genome is healthy, whereas 98 per cent is junk. Most of the plants and animals have either only healthy genomes or they have a number of junk genes as well. But the latter’s proportion in animal genomes is incomparably less than their proportion in the human genome. Thus, junk genes could be the key point of the human mystery. However, it is difficult to accept that the whole culture and civilization has been created either by two per cent of healthy human genome or merely by 98 per cent of junk genes. In all likelihood a third factor has to be introduced into our train of thought. But before introducing an
additional factor, let us try to understand what happened to our ancestors that destroyed their intact genomes. I failed to notice anything about this issue in Watson’s works. However some parts of the possible answers can be found in the works of Lamarck and Freud. But we will go our own way.

According to the literature on the history of our Earth, the disappearance of forests where our ancestors lived and the ice ages prevented the anthropoid apes from satisfying their biological instincts in the way which was usual and necessary for them. And this proved to be fateful for these instincts and their genetic background. Those functions which are not used successfully disappear from the living organisms due to the economic principle characteristic for every biological entity. As a result some anthropoids became full of holes in respect of biological determinism. Thus, the only method of acting they could apply was in all likelihood trial and error, the original mechanism of evolution, this time on the level of behavior. No genetic background of trial and error is a necessary presupposition because random changes work on all levels of the universe according to universal Darwinism. A great variety of trials was possible due to the flexibility of the human body. Watson found many other animal species also with genomes full of holes, however – as we can add – it was only the human species which survived its “biological death” and revived as a cultured “animal”. The reason for this survival – as we pointed out above – was perhaps the enormous flexibility of the human body.

Finding, accumulating and preserving – in the pedagogical and historical sense – successful trials led to a new entity we rightly call culture. Culture has much in common with the genes but also has its special features. Culture is also a program of behavior but it cannot be inherited biologically, nor does it have biological roots. The religion of sacred – totem – animals proved not to be a successful religion. We could not return to the simpler, inflexible levels of animals despite the fact that animals were superb in comparison with the undetermined and chaotic species of the first prehistoric men. This is why it was inevitable to invent artificial languages – of art and verbal speech, as well as writing – so as to make it possible to share experiences among the members of tribes and fix them materially in order to preserve the acquired knowledge in a way more reliable than the biological. Only a very small part of the permanently growing cultural programs can be acquired via learning and fixed by the memory of human beings. According to some new investigations junk genes belonged in their natural form to the upper – that is, leading – level of the
genome, which switched the activity of operating genes on and off. Now, it seems true that we humans are – as a result of natural catastrophes – not a gene – but rather cultured machines, if we are machines at all.

It is perhaps not an absurd hypothesis that the results of successful trials found their more or less stable biological contacts with these leading genes by which they partially filled in the absent parts of human genomes. Maybe the junk genes carry a lot from the original biological nature of humans, whereas the cultural programs reflect first of all the requirements coming from the new natural and social environments. And perhaps this is the actual Freudian contradiction between culture and biology within us and not the clash between the instincts and culture, because neither the intact instincts nor the ready-made cultures could “meet” within personality, as they never existed at exactly the same time. The variety of cultural programs in space is much larger than the gene’s variety. On the other hand the length of time of the validity of artificial programs is much shorter than that of the gene’s programs because of inner and environmental reasons (e.g. outdated solutions or the case of Atlantis). These qualities of culture lead to the proliferation of mankind on the Earth and the frequent changes of cultural programs, that is, to history. As a matter of fact the history of any social entity can be either a development or a decline depending on the state of affairs within and outside the culture. As we must permanently make decisions and choices, a human being is by no means a machine in the classical meaning of this term.

Creativity as human nature

Watson found a lot of animals with genes that had holes. This kind of genome can perhaps be a genome of a developing new species or that of the species in their decline. This is of course a speculation which has to be reframed into a scientific hypothesis and proved or denied. But this would be a job for biologists. One thing is almost certain. We human beings could extend our existence on the Earth by inventing culture – artificial genes – which was inaccessible for other animals which died out because of their inflexible body and its consequences. Adam defeated his death with the assistance of the tree of knowledge but not forever. Why? Because we, humans tend to destroy ourselves. This is the dark side of creativity. To create we have to destroy. Among other ways of self-destruction we fought and are still fighting each other
as if we were different species simply because we have different cultures fixed in our artificial genes connected with the natural junk genes. This kind of primitive racism started very early in the prehistoric periods. People of one culture regarded people of another culture as other animals and frequently even ate them.

Another side of this coin was the primitive humanism where peoples of the same culture lived together in a pleasant and supportive psychological climate. There have been a lot of attempts to unify the whole of mankind. One of the most powerful attempts of this unification was Christianity which worked with such a large concept of man which included everybody in mankind – people of all nations, social levels, the healthy and ill, men and women, sinful and innocent, friends and enemies – in the name of love. Frankly, the concept of love in the New Testament is not a name of a positive – or any other – emotion. Christian love was and still is a logical-rational principle of the unity of mankind. This approach created huge practical, pragmatic problems of cultural synthesis. But we are still too far from the real concept and practice of unified mankind. One of the most threatening problems for us is the high possibility of our species’ suicide by killing each other and our natural environment. As any traditional war with firearms is an indicator of collapse of intelligence and creativity, both intelligence and especially creativity are issues of first importance in the highly civilized 21st century. That is, we not only are but should be creative as well.
3. The Main Frameworks of Creatology

A Cross-sectional Study

The Creatology triangle or pyramid

The main framework of Creatology is – for the time being – the Creatology Matrix. Matrixes are excellent tools of sciences especially in their early periods when the main concepts and their relationships have to be elaborated and established. With matrixes we can anticipate the basics of the science in question. A well developed science on the other hand can be presented as a full graph where every dot (concept) is connected with any other dots, so we have a lot of routes from any point to any other points. Moreover, every dot (concept) can also be presented as a matrix or graph where again we can search for the new sub-concepts and their relationships. Thus the inner structure of sciences can be presented as the hierarchies of graphs or matrixes. Normally a science has the shape of a triangle or more exactly a pyramid – based on a large quadrangle – on the top of which can be found the central concept of the science: in our case creativity. The more or less elaborated graphs or matrixes are situated under the central concept. Paradoxically the basic matrix can be found just under the main concept of the domain.

Figure 1. The Creatology triangle or pyramid

The concept of creativity

The basic Creatology Matrix

Extended and detailed Creatology Matrixes
The basic Creatology Matrix

Figure 2. The basic Creatology Matrix

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<th>Product</th>
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The top line of Creatology Matrixes contains the aspects of creativity. Every creative act can be described from the viewpoints of investment (ability, process) and output (product and feedback, which compare the goals of creative work with its results). The creative process is essentially teleological even if we have goals in our imagination which act as causes, that is, in the form of pushing force. As the circle of regulation can be described on different levels according to the left column (culture, organization, group and personality), the terminology of the matrix is by no means merely psychological (e.g. the term of ability). Neither it is merely organizational or sociological or historical, and so on. The sixteen squares of the basic Creatology Matrix identify also sixteen important subtopics: creative culture, creative organization, creative group and – finally – creative personality. Likewise we can speak here of creative process on the levels of culture, organization, groups and personality and also products on the same levels. The feedback works also on all of these four levels. In comparison with the earlier forms of Creatology Matrix (Magyari-Beck, 2007) we have added here – on all of the four levels – the feedback function which can be synonymous with acceptance or rejection of the products, processes and abilities. E.g. products can be ugly and dangerous, process can be immoral and ability weak. In this case the creative enterprise must be repeated under better circumstances or abandoned altogether. The levels can contradict each other: e.g. what is unavoidable on the level of culture can be overloading for personality, or organizations can prefer those sorts of regulation which are intolerable in teams and so on.

I always proposed to start studying the actual and potential content of the matrix from above and – at the same time – from its right side. The considerable experience of successful sciences votes for these starting points. The classical
sciences like physics, chemistry, biology, psychology and sociology started their investigations on the clearly visible macro levels: physics with the celestial bodies, chemistry with the complex forms of matter, biology with animals and plants, psychology with the behavior of men and animals, sociology with the large populations, and so on. As for the products of creative work, they compose the most phenomenological levels of the creativity question, although both the process and ability have their phenomenological or factual surface to be studied as well. However, finding and investigating creative processes and abilities can only be legitimated by the presence of creative products.

**Feedback in the long run is the test of time. One of the most remarkable features of truth – that is, the adequacy of reality and symbol system which is the main value of creativity – is its ability to survive even in adverse circumstances.** These adverse circumstances exist even today when truth as such is denied even by scholars and philosophers who speak not of truth but of the multiplicity of different truths. Yes, we also accept the multiplicity of truths. But the multiplicity of trees does not mean that we should forget about the notion of tree. Multiplicity of facts is always under the unity of their common concept. Otherwise we arrive necessarily at strange conclusions. E.g. if there are many truths describing the same entity without a central meta-concept their set can inevitably contain a truth which claims to have all the others as its special cases. Now, it is a question of evidence and verification whether this claim on the part of the truth in question can be accepted and it is really more general and comprehensive than others or not. If yes it would be an enormous mistake to suppress it and regard it as equal with its special cases. It is fashionable today to forget about the third dimension of reality which can and should be reflected by the abstraction ladder of symbol system.

The Creatology Matrix is not a classification system as its main sub-cases do not exclude each other. E.g. the levels include each other from the top to the bottom and vice versa. Culture includes organizations, organization includes groups and finally group includes personalities in reality, and vice versa: personality includes groups, group includes organizations and finally organization includes culture but in this direction the inclusion is virtual and model-like. These “upside down inclusions” are necessary from the point of view of the self-regulation of social entities. The aspects of product, process and ability cross each other again in any creative phenomenon. Products – as models – and process – as work or game – can enhance the ability to create, ability – as
improved givens – and process create products, ability and products are the conditions – among them the motivations – of the process. We can find here again a new Creatological triangle. The main concepts and their contents meet in the squares of the Creatology Matrix creating new sub-domains and their expressions, like creative culture, creative organizations, creativity engineering and so on. In a word the Creatology Matrix is a tool for the analysis of facts: the real creations. The basic Creatology Matrix can be developed in many directions. It can be both extended and made more detailed. For example we have already extended it by adding the feedback function to the main set of aspects. The next sub-chapter will show the possibility of itemization of the basic Creatology Matrix.

**Detailed Creatology Matrix**

Every square of the basic Creatology Matrix can be subdivided among others in the following way:

Figure 3. Details for a more elaborated Creatology Matrix

<table>
<thead>
<tr>
<th>method/approach</th>
<th>Factual approach</th>
<th>Normative approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative investigation</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Quantitative investigation</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Let us begin by defining the notions on the top line and the left column. By factual approach we mean here the investigation into the spontaneous phenomena of creativity (spontaneous in this context is something which was neither planned beforehand nor managed on the level of its process by an agent from outside). By normative approach we mean here studies in creativity aimed at finding better ways of creation. By qualitative investigations we mean here verbal descriptions of the facts and norms of creativity and construction of whatever verbal theories in the domain. By quantitative investigations we mean here the building of mathematical models of the phenomena and norms in question. The four squares in this sub-matrix are as follows: factual qualitative investigations, normative qualitative investigations, factual quantitative investigations, normative quantitative investigations (creativity engineering).
we subdivide all the squares of the basic Creatology Matrix using this smaller sub-matrix we will have a detailed Creatology Matrix which has not less than 48 squares. One small remark should be made concerning the small system of four squares. If we accept Stevens’ notion of nominal scale for which all kinds of naming are a sort of measuring – namely nominal measuring – then there is no such thing as qualitative investigation. Because a well shaped part of mathematics – mostly statistics – applies to the act of naming.

The figures in squares show the optimal sequences of studies in any kind of subject matter including the arts. At first we usually describe the facts in a factual qualitative way. Then we either apply the results or introduce mathematical means and models. The end of the process is the quantitative normative engineering (even in the arts, see the genre of geometrical art). Thus this matrix with four squares determines as obligatory only three steps of problem solving. This is valid also for Creatology, which can be its own subject matter. It would be possible to create more Creatology Matrixes. And this happened. Before showing some of them, let me cite here the opinion of Scott G. Isaksen, my former director in the Center for Studies in Creativity at New York State University College at Buffalo from 1987 to 1991: “I am going to hold off on comments about Istvan (it’s me – Istvan Magyari-Beck) because of all frameworks his was the most broad for the purposes of epistemology or classification.” (In: SuEllen Coleman, 1993, pp. 118-119)

One of the worthless attempts in Creatology Matrix making

On the other hand I also made enemies with my work. Unfortunately one of my best friends in 1987 – John Mike Fox – when I first visited the Center for Studies in Creativity, came up in this 21st century with a kind of matrix – which I have never created – and criticized it as if it were mine. Criticism and critical thinking is a good activity and ability in science. To create a new Creatology Matrix is also a praiseworthy activity (there are already a number of them). But to compose a bad Creatology Matrix and attribute it to me and then criticize it as if it were mine is an unacceptable step wherever it happens and whoever does it. Let us see Mr. Fox’s matrix!
And now some comments on this matrix: Firstly, I have never accepted the four P’s even as a part of any framework of studies in creativity. These four P’s are together simply a fashionable set of words because all of them start with the letter “P”. Secondly there is no reason to speak of press in creativity. Press as press is used in totalitarian societies. But if you intend to speak of determination this term would not be acceptable, because press and determination do not have the same meaning. Press can of course be a very small – ethically dubious – case on the map or graph of determination of creative thinking. Thirdly why did Mike put person and individual in two places in the matrix? This makes an unnecessary confusion in HIS system: the square of 4.1 – with the name of person from above and individual from the side – is meaningless from the point of view of interdisciplinary approach. The squares 1.1, 2.1, 3.1 are superfluous as the person or individual at the bottom of the left column defined the relationship between the levels, especially if we allow the permutations of four levels – which frequently happened in history. For example Napoleon as a person was on the top level in French politics after the French Revolution. The number of permutations of the concepts in the left column is 4! = 24. And any of these permutations had concrete instances in history worth studying as facts in respect of creativity. Only the squares: 1.2, 2.2, 3.2, 4.2, 1.3, 2.3, 3.3, 4.3 are common in my matrix and Mike’s. Fifthly, Ability – which is not a narrow psychological term in my matrix – totally disappeared from Mike’s matrix. We cannot define in his matrix either the creative culture, or creative organization, or creative team, or creative personality. Finally, contrary to what Mike is saying, no framework can be empirical. Any framework can only be a theoretical system of conceptual boxes so as to put the facts into them on the basis of well established definitions. I will not speak here of the lack of feedback in Mr. Fox’s matrix as it is a novelty in my matrix presented above in comparison with its first published version. Now we have a huge number of matrices in this field and many of them are worth noting. Let’s improve them.
4. A Brief Historical Overview of Creative Studies

From First Complexity through Simplicity to the Second Complexity, a History of Creativity

Figure 5. Trend of reasoning in history

The pre-disciplinary phase

In this figure we can find two axes. The horizontal one is historical time. The vertical is the complexity of worldview. The curve describes the historical development of the human mind in every domain, including the domain of creativity. Thus, the development of studies in creativity also had three periods. The first one was the pre-disciplinary period. This period was – as the earliest – the era of religions, philosophy and humanities. Reasoning in this period had to be very complex, due to the lack of sufficient routine, experience and knowledge at the disposal of early mankind. There were no disciplines which studied well
outlined domains. Almost all problems were interconnected with a number of other problems even if they were exceptionally far from each other. Later on we will discuss the nature of studying creativity in religions, philosophy and the humanities. The very first form of collective consciousness was religion. Religion was followed by philosophy, and philosophy by the humanities. Every step forward had the nature of a revolution in human thinking.

Religion’s function was to establish the upper limits of human aspirations which we lost in the process of losing the larger part of our healthy genome. Genetically governed animals have a biologically determined ceiling of need satisfaction. Normally they cannot maximize their utility. Humans on the contrary are open from above and have no limitations in need satisfaction. It is the culture which limits us. Religions as a rule tried to persuade their followers of the usefulness and noble nature of modest ways of life. Otherwise prehistoric men would have destroyed and consumed the environment and also each other. The second revolution in human thinking was the emergence of philosophy in the sequence of processes of Enlightenments especially in Europe. Enlightenments waged their wars against religions. Finally the humanities appeared on the scene as the result of the disintegration of the great philosophical systems. This process was started by the distribution of labor in studying the sub-domains or chapters of philosophy.

The phase of disciplines

The central part of the curve – which took place between the scientific revolution at the end of the 18th century and the middle of the 20th century – was that of the more or less well structured disciplines. Here the studies in creativity were imprisoned in different sciences and disciplines, although mostly in psychology. This was not the fate of only the creativity question (and psychology). Biology was also separated from physics, physics from chemistry, psychology from sociology, and so on. And all of these cognitive boxes had their prisoner-topics. Among them we can nevertheless find a lot of contributions to the future creativity studies: e.g. the chemistry of the talented brain, the biology of inheritance, the social environment beneficial for great achievements, the history of anything human and so on. The period of studies within the framework of different disciplines has at least two interconnected
specific features regarded as evidence of progress of investigations: simplicity and isolation.

The main enemies of sciences to be defeated by them were the humanities and philosophy because they had a much wider and more complex nature with much denser nets of interconnections among the aspects and parts of reality they reflected. The lack of firm factual basis also played an important role. See below! Nor the religions liked the so-called “primitive worldview” of especially natural sciences. Sciences, on the other hand, found religions, philosophies and the humanities devoid of well verified facts and frequently called them mere speculations. The period of sciences more or less isolated from each other lasted from the 18th century till the advent of the so-called knowledge and information society: a western dream which we will have to gradually give up. As for creativity, there were and are and will be no disciplines for which the creativity question is alien because all sciences have their creative history.

The post-disciplinary phase

The period when scientific monasteries were disassembled started with the approach of the practical, pragmatic spirit in the late 19th and early 20th century. The new post-disciplinary phase had a number of names, like: multidisciplinary, interdisciplinary and cross-disciplinary phases. The multiplicity of names was the result of the fight between the powerful specialized scientific institutions and organizations, which reflected the “traditional” distribution of domains among disciplines and the practical, pragmatic aspirations which prefer to solve complex real-life problems. We all know that – except for some rare cases – real-life problems cannot be solved by any single discipline. They require the cooperation of a lot of sciences. The story went in the following way: the first declaration of attack against isolated disciplines was announced via the notion and goal of multidisciplinary studies. The counterattack on the part of specialized scientific organizations against the word “multidisciplinary” was based on a false observation according to which the different disciplines were not interconnected in the framework of a multidisciplinary approach. To correct this alleged fault a new term was introduced, namely the word “interdisciplinary”. Now the new counterattack from scientific bureaucracy came again with a false qualification of interdisciplinary approach maintaining that in this case the “inter” occupied more place in the framework in question
than disciplines, that is, this approach is empty in respect of professionalism. As most of the practices still found themselves beyond any single discipline and required a cooperation of sciences, the problem was solved again by a new term: “cross-disciplinary” approach. The whole fierce struggle took place on the merely formal, linguistic level or on the level of verbal magic. The meaning of the terms multidisciplinary, interdisciplinary and cross-disciplinary remained the same. Those responsible for the whole hysteria were first of all scientific bureaucracy and scientific bureaucrats. As a result of this story we would prefer the term “post-disciplinary”. For us post-disciplinary is a reserve concept if the intellectual bombardment by scientific bureaucracy compromises the notion of “cross-disciplinary” as well. The second reason why we prefer this term is that – with it – our symmetrical figure will also be symmetrical in respect of terminology. Creatology – paradoxically – is one of the post-disciplinary disciplines.

The practical, pragmatic phase

Before going into the details of this phase which is the most fashionable today, let us notice the broken line in the middle of our curve above. This line separates two main historical-epistemological periods, namely the first, analytic and the second, synthetic period. The middle of the curve can be found at the minimum of its complexity – where the mainly analytical period ended and the mainly synthetic period started its career – which was achieved in the era of scientific positivism. That was the era of fact hunters. George Katona – the Hungarian-born founding father of economic psychology in the United States – was the first to call himself a fact hunter. The practical, pragmatic phase is already beyond this curve. We can even say that the human mind has already left behind the centuries of the last Enlightenment and also the decades of post-Enlightenment where rationality was the main form and style of consciousness. A Swedish author – Nils Brunsson – published a very instructive book where he formulated a central thesis according to which rationality cannot promote organizational changes. Organizational changes can occur only on the basis of irrationality (Brunsson, 1996).

However, my impression is that Brunsson spoke in fact of all changes, not only of organizational ones. That is, his position is a sharply anti-philosophical and anti-scientific one. The basically narrow-minded and dogmatic practical,
pragmatic phase was born in the process of struggle against the theoretical and abstract way of thinking which was represented on the highest level by sciences as the enemies of voluntarism. This means that for Brunsson the actions can only be launched voluntarily. However in this case where is the role of sciences and their applications? The historical period we live in is a radically anti-intellectual era. However the old intellectual story of European culture still goes on. In medicine, engineering, geology, jurisprudence, architecture, criminal investigation and so on the significance of science is still preeminent. Is it perhaps only the theory of organization, political sciences, sociology and psychology, etc. that failed intellectually? The answer is: by no means. Instead it seems to me that irrationality is an intellectually created commodity sold first of all to those cultures which are “persona non grata” for the more powerful and creative superpowers. Take notice of this method: the poisoned cultural entities have first to buy the poison with which they poison themselves. One thing is certain. Brunsson’s work is far from being a universal prescription for practice and problem-solving. But where is the border between a successful Enlightenment and rationality on one hand and the region of their failure on the other hand? Unfortunately this question was not even raised by Brunsson.
5. The Concept of Creativity in Religions

Miracles or Machines

The original form of the creativity question

It has always been a commonplace that not all people are equally creative. This had been clear even in the earliest, mostly religious period of history. So it seems quite normal that the first problem in this domain was to understand the extremes in creativity – and abilities at large – that is, high-level creativity and low-level creativity. The average level of creativity did not attract any attention on the part of the first conceptions of creativity. The paradox is that while the first steps of abstractions in this domain separated the average from the extremes – where the outstanding people and incapable ones were frequently identified e.g. by Taoism and the Bible – according to this view all people as people are equal regarding their abilities. But because some people are actually extremely creative the key to the solution of this puzzle was – in the mostly religious periods of history – a kind of transcendental force, usually God, which helped people in their problem-solving, either from outside (e.g. in Greek legends) or from inside (e.g. in some schools of Christianity). Briefly speaking, both the strong and the weak have a kind of double personality: a worldly personality and a divine personality. Provided this is true then we should search for the Jesus archetype here in the elementary proto-anthropology. The problem to be solved was the proportion between the worldly part and the divine part within personality. In this opinion the larger the divine part within us, the more creative we are. Jesus in this respect occupied a very high position among people, however behind his excellent quality one can guess an enormous superiority coming from his divine nature.

The “birth” of God, transcendence and social order

There are a lot of religions. Some of them speak only of transcendence, others of personified transcendence, that is, God. For example, Richard Dawkins accepts as religion only the views where a personified God reigns (Dawkins, 2007). Be it one personality or more. This is of course a kind of reduction which helps him in his campaign against all kinds of religions as well. From the didactical point
of view one of the best ways of understanding the notion of transcendence would be the Freudian one. Another advantage of the Freudian view on the emergence of religion is its friendliness towards the theory of evolution. It is also important that the Freudian conception of the emergence of religion is connected with the starting point of history and the end of the exclusively evolutionary period of mankind’s development. Freud started his atheist train of thoughts with a hypothesis on prehistoric men or rather their ancestors who had to submit to the strongest male member of the tribe. This sort of power was inherited from the animal past and as such was useful from the point of view of the physical strength of new generations, as they will have the better genes of the best – strongest – leader. However this system was not useful for the other males (or for the generation of variety among the tribe’s members in future generations – Istvan Magyari-Beck). The solution to these problems was to kill the strongest male in an attack by all other males of the tribe (Freud, 1927). We can add that in all likelihood this was the beginning of that anarchy – that is, the comparatively even distribution of power among the individuals – which an English philosopher Hobbes – living in the period of anarchy and suffering from the English revolution – projected onto the past. And…this was also the first sexual revolution or revolution in general.

But the survival of mankind was impossible in these chaotic circumstances of war of everybody against everybody. The primitive centralized power had to be brought back somehow in order to create rules and laws for the community. Democracy works only in cultured and civilized societies and not in whatever circumstances. The ideology of taking this step was to virtually deny the killing of the strongest father. In other words the first primitive cultures denied the idea of death. Instead of death and life they introduced two forms of life: earthly life and transcendental life (naturally without using the term of “transcendence” in prehistoric times). Within this system the alleged ruler was in the transcendental life, and the ruled were in the earthly life. In this wide scope of life, people “did not die”. They only stepped over the borderline between earthly life and transcendental life. And with this journey they acquired a greater power: they became gods. The past (in time) became the above (in space). The single God of monotheism – as we learned – was the result of logical generalization. However, as different monotheistic cultures gave different names and characters to their single but not common God, the monotheism in the world became in fact its opposite: a form of intercultural polytheism. The above-described process is not an exact citation of Freud. It is the result of an understanding and further
development of Freudian ideas by this author. On the other hand this theory can explain the self-contradiction of the male sex of the God who is sexless by nature.

Another puzzle to be solved is the contradiction between the physical strength and the old age and wisdom of the alleged Creator. In the period of polytheism the gods were specialized: some of them had – as a matter of course – greater physical strength than others and this capacity appeared in their images on sculptures or paintings of them. Likewise the fact that we had male and female sexes among the gods was quite natural in this “distribution of labor”. The problem concerning the gods and their abilities appeared when the unified cultures reduced the number of gods – merged in the process of their unification – and became again monotheistic. The development of the image of the Creator can be observed in many paintings, among them in the paintings of the Renaissance, most deeply – in a cultural historical sense – in the works of Michelangelo. He painted the God-Father and the God-Son in two different and even contradictory and paradoxical ways. Both paintings can be seen on the murals in the Sistine Chapel in Rome.

Let’s start with the mural “Creation of Adam”, where the God is rather old and wise than strong. This picture does not correspond to the Freudian conception of the first God – God-Father – who was originally young and strong, and killed as the strongest among the males of the tribe. But Jesus Christ – the God-Son – on the mural “Last Judgment” IS young and strong – a Renaissance sportsman or fighter – who condemned the sinners. However, in the real historical sequence the God-Father – as we mentioned – did not have the features of the old and wise God-Father painted by Michelangelo but those of the God-Son again by Michelangelo. So perhaps the historical fact is the reverse of what is presented by Michelangelo: the God-Son type person was the father of the God-Father type person, who appeared only when the system of values changed and people started to appreciate experience and wisdom rather than mere force. It is exactly these God-Father type leaders who introduced the first principles which led to the social order. Incidentally, we cannot draw the inferences presented above by analyzing the traditional image of God-Son in the traditional paintings.
Permeability of the border between the real and the transcendental

What is the difference between the real and the transcendental world? As we all know the transcendental also exists, so the actual question is about what we called “real”. Well, real is that part of existence which is given to (Kant) and can be comprehensible for us. God belongs to the transcendental entities by definition, but it is impossible to prove its existence. The God of religions is not only a great Creator, but also a distributor of creativity among mankind. As for transcendence, it seems to be either God himself or the context of God or a set and system of laws and rules never accessible for us or an “empty beyond” the worldly – real – level of life. It is very difficult to exactly describe the birth of transcendence in any of its versions. The key to its general understanding – without any details – is perhaps the knowledge of our emergence in the process of evolution and history and limitations as human beings. Because the rules and laws of reality – nature and society – came from transcendence as its particular manifestations, no direct knowledge is possible concerning the transcendental causes of this “conditional”. The basis of our world can be God or the transcendental rules or – finally – nothing which is – in the opinion of Giordano Bruno – in fact everything in disguise. The emptiness of transcendence is an illusion because it means not only the lack of outer but also inner limitations of the infinite (Bruno, 1584a, 1584b).

At first acceptance of the transcendental led also to the separation of rules from the people. Thus the power and its legitimacy came originally from above. This is the most evident in Christianity where the God – in the form of his son – came down as Jesus Christ and introduced a certain moral, psychological and social order (Sermon on the Mount). This legitimacy from above has been replenished by democracy, that is, by legitimacy from below. The two types of legitimacy became one in the period of Romanticism, when peoples were regarded as also divine entities. After a while a kind of institutionalization of crossing the borders between transcendence and material life was established also from below to above – the cases of saints – and vice versa – the cases of shamans, priests, philosophers, artists and so on. This “happened” well before the circle of Jesus’ life and death and resurrection. Christianity only reinforced the possibility of this activity. The journey was in fact imagined as the travelling of the soul up and down whereas the traveler’s body preserved its identity for a while. The expressions of inspiration and obsession so outstandingly reflected in Gothic and Baroque works of art spoke of temporary wandering of divine creativity through
the border in question without leading to the final separation of body and soul, which was originally defined as death. So death originally was not a biological phenomenon. However, even Christianity allowed people’s resurrection – but only once at the Last Judgment – if their feelings and life conspicuously followed Christian morality. This vision predicts an advent of a new divine democracy organized by a better and morally improved mankind.

The first elite

The first creative elite was recruited from those people whose soul frequently went above and returned to the material world and in this way connected the earthly life with the divinity. The essence of creativity for them was not at all a permanent creation of innovations. They served at least three ends: giving, changing and preserving. For the sake of a better memorization of these functions we will present them again as the angles and inner space of a triangle:

Figure 6. The creative functions of the first elite of priests

![Diagram showing the creative functions of the first elite of priests: Giving, Preserving, Changing]

In this understanding the whole religious society was creative. Some members of society were givers, others improvers through practicing these rules, and all of them – preservers. Of course the emphasis frequently altered, shifting from giving through changing to preserving or vice versa. The sequence of these functions also varied from time to time. As the first goal was to acquire and
maintain a successful culture within and contrary to changing circumstances, the final aim of new rules and their reformations was the preservation of the culture in question. Can we say that these attitudes and activities were the manifestations of conservatism? By no means! Perhaps the chief message of ancient architecture and sculpture was the idea of stability. Recall as an example the art of ancient Egypt. It should be clear that the first cultures and civilizations tried to preserve their achievements and prevented falling back to their prehistoric origin which was too close to them in time.

The epistemological truth of transcendence

All kinds of entities which we accept as existing must have the value we call TRUTH. As far as transcendence is concerned it is impossible to prove it beforehand. Then on what basis can we accept its existence? And where does it reside? The widespread solution to this question is faith. Can faith be a sort of truth? Now, let us try to understand the concept of truth and its factors! Below we attempt to put down a formula of faith which can perhaps be a starting point of this enterprise.

Faith = Hypothesis x Subjective Belief

What are the factors of this formula? The answer is: Hypothesis and Subjective Belief. Hypothesis is the cognitive element of Faith common to all cultures and civilizations – and as we shall see also to the truth of any kind – which is worked out by the professional elite of whatever religions. Subjective Belief is an emotional attachment or attribution of certainty to the hypothesis. As the latter is the key point of any religion, the professional elite of every religion is mostly anxious about this component of religions. The main job of priests is to maintain our Subjective Belief and they do this mostly by emotional means which can influence their audience. But while the Hypotheses are or can be made overt, the people’s Subjective Belief is deeply hidden. Subjective Belief can be demonstrated in many ways but what happens if the alleged believers lie? This is why any inquisition and inquisition-like activities always “investigated” this part of the Faith so as to verify the sincerity of believers. Unfortunately inquisitions used not only cruel but also scientifically invalid methods which could not prove or disprove anything (Baigent and Leigh, 1999).
The cruelty and invalidity of the methods of inquisition presupposed in fact each other. Why and how? Because of the incapacity to clarify the real status of people’s Subjective Belief by the sadistic methods of inquisition, the factual goal of inquisition was instead to intimidate people in order to prevent them from being hidden unbelievers. However this goal and practice by inquisition led instead to a vicious circle: inquisition created many unbelievers – or pseudo believers – thus the persecution on its part had to be increased which resulted in even more unbelievers or pseudo believers, and so on. Then why on earth do we speak of Faith as a kind of Truth? The answer to this question can be as follows. Faith is the pragmatic Truth (Magyari-Beck, 1996), because it influences people’s behavior as if it were a Truth and through the people’s behavior it does become reality. Religion works in the manner of human engineering. For example, if I believe in love and behave as a humanist, my belief can create truth from the faith. Even though we can neither prove nor disprove the religious Hypothesis, we are able to make the Faith valid in respect of our pragmatic behavior. In other words creativity in religion is the generation of Faith and its factors. This is the foundation on which the behavior of members was influenced at the very beginning of history. Faith is the proto-truth after which other forms of truth were worked out. However, before discussing them, some further aspects and forms of religions – important from the point of view of Creatology – will be outlined.

Thus taking into consideration the above, the formula of faith – as that of the religious pragmatic truth – can be reformulated in the following way:

Truth \text{(RP)} = \text{Hypothesis} \times \text{Subjective Belief}

The small letters (RP) next to Truth stand for “religious pragmatic”. In other words: religious pragmatic truth = faith.

Miracles and rules in religion

Prehistoric men and the men of early history were empirical in a curious way. As they did not have any valid theories about the universe, all the facts for them were basically different. This is exactly the definition of miracles. Miracles are the set of facts so individual that they obscure the concept of the essence behind them. This view is close to the contemporary postmodern. The fabulous force which promotes the appearance of miracles was – and is where it occurs today –
the merely arbitrary decisions made by a transcendental agent. However, early men could not avoid finding a number of similarities among the facts and also could fix in their memory certain repeating sequences of events. Thus they were able to invent a simple and primitive order behind the chaos of different facts. This order became more and more complicated. In the 18th century a new religion – different from Christianity – was launched in Europe, which regarded the universe as a kind of machine which works on the basis of fixed rules. This religion was called Deism. That is, at least two religions coexist on this continent from that time on. The only basic problem was the subordination of these religions. One of the solutions regarded the personified God as the all-powerful dictatorial creator and ruler of the universe who still constantly performs miracles. Another solution regarded the rules as more powerful. E.g. the God of real Christianity is not absolutely sovereign. He is not totally free as he obeys the general rules of his goodness. So whether he likes it or not he, as an entity imprisoned by his personality traits in a manner similar to man’s, is a part of the universal mechanism. This God must be always good.

Deism

The original authoritarian God and proto-phenomenology belong to the same worldview. Thus, it seems that contemporary phenomenology returned to the very ancient irrational pictures of the Universe. A historical circle is now closed. We Europeans have arrived at that – Greek – bottom from which Europe began its historical career. On the other hand Deism became the basis of a rational and scientific worldview. It is continuously hunting for and swallows the isolated individual facts making them examples of more general rules. Deism became the ideological basis of the Western philosophy of the Enlightenment and also the scientific and industrial civilization which fundamentally influenced creativity in Europe, especially in the West. Thanks to Deism, the political theory and practice of democracy emerged as well where – speaking in terms of Friedrich Nietzsche – everybody is equal vis-à-vis the rules and especially the law, like the facts in sciences. The whole Western development – be it philosophical, scientific or political – manifests itself in the war against the isolated or independent facts, persons and so on. This spirit of place and time we can find also in the so-called arts industry, bureaucratic organization of work and conformist behavior, etc. It would be a great mistake to think that different
religious beliefs do not have their own practical, pragmatic influence in social life.

In fact there are three basic forms of Deism. The first one accepts the existence of God even after he designed and created the world-machine, but this God is now retired and lives “on pension” as he is now passive. The second one is a “Godless” mechanism of the Universe, which has never needed and will never need any designer and creator. This religion is called atheism. The third worldview is between the former two and as such accepted the existence of the God-pensioner but does not deny even frequent miracles. According to this view, God occasionally becomes active and creates strange events beyond and aside from the world-machine. In terms of political application the “God on pension” and “no God at all” views are the systems where only the natural and social rules count, no matter whether they have a religious decoration (“God on pension”) or not (no God at all). The other name for these systems is democracy (with the cult of sciences), or the dictatorship of rules and laws. Constitutional monarchies and their successors – e.g. strong presidential systems – seem to be the most complicated and tolerant societies where the laws rule, but exceptions also have their right and place. For the sake of easier memorization we can present another sequence of these three types of Deisms, namely: “encroaching God”, “God totally on pension”, “no God” (atheism). Perhaps these were the stations on the way which leads to the religion of atheism.

The conflict between Creationism and Darwinism

One of the most interesting thinkers of our century – Richard Dawkins – in one of his recent books (Dawkins, 2007) inadvertently executes Lenin’s “last will and testament” concerning the necessity of militant materialism. Dawkins fiercely attacks all kinds of religions, coming up with a number of bright “atheist” arguments and also with a number of weaker ideas which sometimes contradict each other. Nevertheless I enjoyed his intellectual achievements and found many of them very important for the present work as well. E.g. “A universe in which we are alone except for other slowly evolved intelligences is a very different universe from one with an original guiding agent whose intelligent design is responsible for its very existence” (Dawkins, 2007. p. 85). However, I don’t think that these were two different universes. Evolution also
has its strict rules of variety generation and selection and – as the examples of domestic animals and cultivated plants show – we were able to imitate those rules very early in history (or prehistory). Today we can imitate the variety generation and variety reduction via selection by technical means.

Thus, if God is defined as the omniscient, most powerful and most complicated, etc. entity then he/she/it can design a Darwinian machine of evolution as well and it is impossible to understand why the religious Darwin collapsed psychologically just before publishing his first book The Origin of Species in the era of flourishing Deism. Thus the sharp contradiction between Darwinism and creationism has not only disappeared – in the era of life-imitating machines – it never even existed. The book The Origin of Species and especially neo-Darwinism could – but unfortunately failed to – contribute to the enlargement of deistic ideas by enlarging the set of machines which either are created by God and able to produce even life or have always existed and always will. The alleged God of every religion prefers to remain hidden from the eyes of people. An evolutionary machine can brilliantly solve this problem by imitating the emergence of life from the smallest pieces of inanimate matter. Briefly speaking, materialism can be the best way of God’s self-concealment. As atheism is a sub-religion of Deism, it does not matter from the point of view of scientific thinking and practice whether you as an atheist regard yourself as religious or not.

Miracles and creativity

Before closing this chapter, I must say that I have no firm opinion concerning transcendence as the latter is beyond my competence. I cannot support arguments either “for” or “against”. For me religion is a wonderful part of the history of culture without which – in all likelihood – it would have been impossible to establish any basic value systems at the beginning of human history when no philosophical and scientific truth existed. The God of miracles and phenomenology is generalized signals of our having no idea about the mechanism of fact production. While a world-machine type model can “evaluate” rationally our new ideas and inventions from the point of view of their adequacy for or its lack in the world-machine, this kind of feedback is totally absent in the religions of only miracles. The only criterion of acceptance of creation was, according to the Bible, God’s taste: “God saw that it was good”.

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It is funny that while most of the creativity scholars deny any form of creationism – or alleged creationism – and support a scientific worldview, they call idea generation creativity no matter to what extent this activity reminds us of God’s creation of miracles. We can summarize our short investigation into human creativity in respect of religion as follows. The creative act has at least two layers. The first one is the improvement of the existing world machine via well measurable adequacy of new ideas while the second and higher one is the generation of additional values by will (analogy of miracles), which pave the way for higher standards of human life in the future.
6. The Philosophical Phase of Studies in Creativity
Geniuses and Epigones

Why could religion stimulate the development of philosophy?

Religions together are permanently growing organic systems of thinking and as a rule are deeply metaphorical with a number of meanings to be disclosed. As a consequence of this, religions are seemingly – and also actually – incoherent intellectual constructions and provide us with a huge number of tasks of discovering these pieces of inner incoherence and eliminating them if we really want to understand and/or explain them. The incoherence of religions is both their advantage and disadvantage: advantage because due to it religions are fertile systems in the intellectual and artistic sense and disadvantage because the clergy has always to limit the permanent flow of religious innovations so as to prevent the religion from changing its very basis. The preservation of religions’ identity has always been a major problem for the Church. This is why the Subjective Belief in religious Hypotheses is the main weakness of all religions rather than their strength, even if the believers are sincere. Thus the formula of Faith (= pragmatic truth) had to be improved and as a result it acquired the following form which led to the emergence of philosophy:

Truth = Hypothesis x Confirmation

The first factor of this formula remains the Hypothesis. By the way the Hypotheses – as we shall see – are always parts of every conception of truth. However the second factor changes with the type of truth we are speaking of as we shall see in the following chapters. Its generalized name became Confirmation instead of Subjective Belief. Keep in mind that Confirmation requires objectivity, that is, the outcome which is accepted by everybody competent in the domain on the basis of his or her expertise and knowledge. The necessary sub-components of Confirmation in philosophy are Doubt and Verification in the form of their logical sum:

Confirmation = Doubt + Verification ©

To confirm any supposition we do need a strong cognitive emotion called Doubt and expertise in the methodology of reasoning, in this case Verification.
Verification controls the logical coherence of the system enlarged by the new hypotheses attached to it. The small letter “c” next to Verification stands for “coherence” which is generally controlled and expressed in terms of rationality and logic. Although these sub-components were proposed by Descartes in the 18th century, this sum is naturally not equivalent to the famous Cartesian multiplication. Then the whole formula of philosophical truth becomes as follows.

Truth (P. Sin.) = Hypothesis x (Doubt + Verification c)

Descartes in fact proposed options of either total confidence (1 x 1 = 1) or gross error (1 x 0 = 0 or 0 x 1 = 0). No measurable degree of truth could be defined in this “yes or no” (one or zero) way of thinking. The greatest minds of the European Enlightenment in the 17th and 18th centuries maintained that if Verification of rational and logical coherence was positively successful Faith would disappear and we would have a firm knowledge. But if falsification was the outcome Faith would again disappear and we would have a demonstrable mistake. That is, Faith disappears in both cases. Thus the formula of philosophical truth inevitably destroys religious faith. However, Verification by establishing – and/or developing – the rational and logical coherence is not the final form of truth. This type of truth indicated only the validity of philosophical systems and can rightly be called syntactic truth. So, the (P. Sin.) in small print next to Truth in the above formula stand for “philosophical syntactical”.

Later on the formula of Truth again changed and became even more complex with the introduction of mathematical statistics among the methods of investigations. However mathematical statistics presupposes an ocean of already discovered facts which were absent in philosophies which were rather intellectual entities baselessly drifting in the air. In the next, scientific period we gradually learned to measure the degree of truth by using the method of establishing statistical significance. But in the centuries of philosophy our method of verification was mainly the control of logical coherence. Philosophical creativity meant the building of coherent systems of ideas which were able to explain almost everything without being empirical to a sufficient degree. The notions of logical coherence and excellence were rated equal in the 17th and 18th centuries. Incidentally the excellence of the universe is a human archetype. Creationists regarded the World created by God as a perfect place. Thus the rational model of the World created by philosophers had to be perfect also as regards its inner logical coherence.
This norm of excellence was furthermore inherited also by natural scientists. Darwin claimed to be the discoverer of the mechanism – variety generation and variety selection – which made and makes and will make nature perfect. Nevertheless the imbalance between religious Faith – pragmatic truth – and philosophical – that is, syntactic – Truth – that is, between these two different forms of truth – remained and will remain the same because the objects of Faith are limitless, whereas the scope of philosophy is miserably small in comparison with religion, no matter to what extent the philosophical literature is growing. Let me say as the final remark about the topic we are discussing here that the “yes and no” method of philosophical syntactical truth (determinism) – used for qualifying the content of consciousness – existed for centuries. However it was nevertheless a great step forward from the point of view of creativity especially because while religions invent by imposing the “truth” (see the previous chapter), philosophy is trying to discover it and understand, among others, human behavior.

Philosophy and philosophers

In the 18th century, a new independent and powerful profession – namely philosophy – and new powerful elite – namely philosophers – emerged. It is true that philosophy and philosophers existed also in the distant past but mainly as individual enterprises and thinkers, sometimes as informal schools like in Athens and Alexandria. Later, in The Middle Ages, philosophy – the so-called scholasticism – became Ancilla Teologiae, that is, the servant of theology which had to increase the logical coherence within religion. That is the philosophy of scholasticism was not yet an independent profession, however its institutionalized school system could be an organization which provided a certain, modest autonomy for philosophy and philosophers. Schools and universities worked as second-rate churches. Religion did not disappear or lose its fundamental position in society during the European Enlightenment in the 18th century no matter to what extent it was threatened by attacks from the philosophy of Enlightenment. The job of servants is uprising. The actual question of those times was about the new would-be leading profession, namely philosophy which influenced the whole spirit of the time and its organizations – e.g. departments of philosophy – in the framework of European universities. What was the function of this newly professionalized form of consciousness? What was creation and creativity in the new period of the Enlightenment? This
question is easily answerable if we define philosophy as the bureaucracy of the mind. The credo of philosophers in the Enlightenment of the 18th century sounded like this: *every statement should be controlled in respect of its rationality, that is, its logical fitness in the systems of ideas (syntactical Truth) accepted by the new elite or its significant parts.* The system of thoughts had to be as comprehensive and closed as possible. Exceptions had no place in coherent systems, at least theoretically.

On the other hand, Deism and within it the “man = machine” religion came down closer to Earth thanks to philosophy’s secularism, however, without touching its factual surface. Philosophical systems – as systems of ideas – remained drifting in the air supported by the “spaceship” of their quasi-comprehensive axioms which were established either arbitrarily like religious beliefs or – very seldom – empirically. The Industrial Revolution progressed without any philosophy of engineering. The abstract idea of machines on the one hand was still attached to the religion of Deism. On the other hand the concrete machines of the Industrial Revolution were constructed on the basis of the practical pragmatic experience of diligent and ingenious craftsmen who were not experts at either religions or philosophy. Cartesian dualism dug the gap between matter and idea even deeper and the camp of philosophers at first was divided into idealists – who voted for the priority of ideas – and materialists – who voted for the priority of matter – and then they clashed and waged a long and time-consuming war against each other. It was the science of cybernetics which solved the so-called “basic problem of philosophy” (in fact the basic problem of Descartes which he had left unsolved) only in the middle of the 20th century. Cybernetics regarded the interaction of ideas and matter – in fact signs and their meanings – as a question of regulation – which is in fact a special case of self-regulation if we take a larger system – and this solution put a real end to the basic problem of philosophy and opened the door of science towards its victory. But let us remain for the time being close to philosophy.

**The units and levels of philosophical creation**

The philosophical period was extraordinarily difficult for talented philosophers. *In order to create coherence* worth mentioning one had to create an enormous system of ideas where a lot of questions were answered and no inconsistency or empty place – unsolved problem – was allowable. In this period, a great number
of mutually independent – or quasi independent – systems of ideas appeared on the scene and became fashionable. In comparison with the religion-dominated centuries where usually one great core religion per culture with an array of sub-religions or sects infected people’s mind – as Dawkins’ followers would say – a lot of philosophical systems were called into existence. The unit of philosophical creation was nothing less than a new philosophy. The first philosophical systems grew out of religious soil quite explicitly. The method was the secularization of religions’ terminologies and ideas. For example, Newton – who was called a mathematical philosopher by Hume – simply secularized Empedocles’ ideas of love and strife when speaking of the forces of gravity and repulsion (anti-gravity) which created the universe.

Later on the clearly visible link between religions and philosophical systems disappeared. However the competition between these philosophical systems was enormous. Many times it reached the level of hatred observable earlier between religions, especially in times when new systems of belief were emerging. But contrary to the tendency of religions towards the monopolization of minds, the battleground of philosophies was a kind of market of purely abstract ideas and their interrelationships. In a sense this competition reminds us of the competition of enterprises in the new economy of the Enlightenment (the 18th century was the century of competing small and middle-size enterprises and the collapse of monopolies inherited from The Middle Ages) or the competition of parties in political life (the 18th century was also the century of the advent of modern political democracy supported by the states).

It is possible to distinguish at least three quality levels among philosophers. (1) Founding fathers of the new systems of coherence, (2) elaborators, who created “isms” or schools based on the works of the first-class philosophers, that is, the founding fathers (elaborators worked on the systems of coherence, trying to make them even more coherent or – sometimes – simpler), (3) epigones, who applied the systems of coherence without developing them in any direction whether logical or communicative. The epigones often even detracted from the works of founding fathers and elaborators. These three mentalities correspond more or less to those of teachers, pupils and practitioners. Great debates tried and try to clarify “who is who” in the philosophical period and after it. The numbers 1, 2, 3 together were also a rank order among the philosophers.
However this competition would have been endless without science entering the picture. A great Austrian mathematician Kurt Gödel proved that no system alone can be totally coherent. To make a system coherent we have to put it in a larger system. But now, the larger system proves to be incoherent. Thus, we need an even larger system and so on. That is, the mere competition between the systems of coherence situated in the beginning horizontally at the virtual start is not able to build a final – or semi-final – vertical rank order among them. Unfortunately Gödel (1906-1978) came too late to predict theoretically the hopelessness of the philosophical era which ended much earlier – approximately in the first half of the 19th century – under the pressure of science. Gödel can be regarded as a genius who drew the lesson from the philosophical era and – at the same time – gave a theoretical foundation for the cumulative type of development of sciences, which was unfortunately denied almost immediately by the oversimplified theory of paradigms created by Thomas Kuhn (Kuhn, 1970). Kuhn put an end to the hope of the possibility of the gradual and cumulative development of sciences by introducing the idea of incommensurability of different scientific entities and reintroduced the earlier – but this time only quasi – philosophical model where the systems of coherence mutually either excluded each other or partially overlap. However, all the systems of coherence were and are commensurable and this is why it was possible for them to compete and for us to compare them.

The new function of philosophy and the problem of values

That’s not to say that philosophy as such collapsed. However its role diminished – by losing the basic problem – and philosophy became a meta-theory of methodology of thinking and investigating. Epistemology got the better of ontology. This is nevertheless an important role because methodology is the archetype of technology: it is in fact the proto-technology. Why? Because investigation and production have a common goal: namely to produce the fact. But in the process of investigation we are searching for the fact’s causes, whereas in the case of production we reproduce the fact artificially on the basis of actualizing the already discovered causes. And we usually modify the causal background so as to produce modified facts, that is, new and different productions. This way from thinking to doing led first to crafts and later to industrial civilization.
Unfortunately industrial civilizations seem very problematic and raise difficult questions of violated classical values. The new products, technologies and methods of organization frequently do not meet the requirements of classical values. It’s high time to recognize that the ontological systems and the axiological systems developed differently as regards their speed. The ontological systems developed faster than the value systems based on the postulates (the normative versions of axioms). Moreover, philosophers took a dismissive position towards the values by approaching the end of the dominance of philosophy. The first initiator of this movement was Friedrich Nietzsche who tried to reevaluate the values. Later on Max Weber announced the era of valueless worldview. As a result of this trend today we live in the psychological climate of negative – destructive – values. We badly need a strong counter-attack against the spirit-killing technical civilization so as to return to the value question. Otherwise the end of history and mankind can be our real future.

The “double truth”

Although the philosophical worldview is much more elaborated than any religions, the latter has a much larger domain and a greater number of followers, especially if we regard atheism also as a sort of religion. We can also say that the relationship between religion and philosophy is as follows (see Figure 7). Thus Faith – or pragmatic truth – has a much wider domain than philosophical Truth. The number of (everyday) believers and the number of (everyday) philosophers is quite different. To be religious is not a profession, whereas to be a philosopher needs a certain degree of expertise mainly in the discipline of logic.

Figure 7. Relationship between religion and philosophy
Figure 7 expresses the fact that the realm of Faith – mostly religions – is the background of philosophy which could up till now elaborate only a small part of its foundation. *The writers of the New Testament were perfectly right when speaking about the power of Faith. Why? Because it was Faith which created the very first human psychological order within our ancestors after they had lost a large part of their healthy genome (if the theory of junk genes is correct).* It was also religion which established the first social orders. The philosophers on the other hand triggered the second revolution in culture by introducing the syntactical Truth which confirmed a part of religious Faith and denied other parts. To my mind every scientific discovery has its roots in philosophy – and through it in religions – be it for or against. Recall the ideas of gravity and its opposite which were used already before Newton by Empedocles’ love and strife in understanding the cosmic processes. Likewise the theory of atoms by Nils Bohr has its final roots in the view of Democritus which was also rather a religion than a scientific hypothesis. Democritus certainly could not validate or falsify his theory of atoms. Another example is the steps of creation in the Bible’s Book of Genesis which are surprisingly close to the general sequence of evolution (Darwin originally trained to be a clergyman). So, one of the roles of philosophy was to preserve some pieces of religious faith in a secularized form and pass them to science. This was not of course a planned and predetermined process. Before starting the discussion of creativity on the scientific level and phase, it is worth mentioning that *the philosophical Truth of coherence underpinned the human mind even better and more firmly for it contributed to a new tool of “double truth” of Faith and Coherence as it was called in the Middle Ages.*
The main function of science and one example

The main function and result of science was, is and will be to fill in the historically created chasm between the world of ideas and the world of matter. One of the most successful methodological steps in this direction was taken by Percy Williams Bridgman in his theory and practice of operational definitions – based on Einstein’s works – in the first half of the 20\textsuperscript{th} century. These two worlds originally developed autonomously in the past, that is, although they were free from each other, they were nevertheless interconnected to a certain degree although very loosely. Philosophers – as we mentioned at the end of the previous chapter – frequently discussed their “basic (in fact Cartesian) problem” in terms of priority: what dominates what? Do ideas dominate matter or vice versa? However this question proved not to be solvable in the framework of a problem statement which rested on the preconception of an alleged rank order between these aspects of ontology.

Thus one of the ways out of this was to formulate a diametrically opposite question about the cooperation between the idea and matter (sign and meaning). This way of thinking – the scientific one – proved to be much more fertile and came directly from cybernetics. According to the cybernetic solution, the ideas and the pieces of matter find their proper place in a circular causality where it is impossible to speak of either the rank order between them or of the beginning of the circular process. A circle has no starting point. Any circle is an endless but semi-closed entity. In the terminology of cybernetics the two factors are interconnected as the stations of regulation. Matter is regulated by ideas – pieces of information, rules, laws, texts (e.g. genetic), holograms, plans and so on – whereas ideas are influenced by autonomous changes of matter, mutations, material causes, reflections, and so on. One of the most important functions of ideas is to stimulate the material processes by switching on the servomechanisms in order to provide an energy supply for the systems of regulation. Thus cybernetics was the real advent of the pan-scientific era which advanced beyond the philosophical era of history.
The nature of scientific Truth

In science we have a new formula of Truth because the concept of Verification has fundamentally changed here. While the meaning of Verification in philosophy was the finding of coherence (recall the syntactical notion of Truth), the main issue in science is factual evidence. That is, here we encounter the problem of database (semantic notion of Truth). Let us compare in this respect the Truth in philosophy and in science! The Truth in philosophy:

Truth (P. Sin.) = Hypothesis x (Doubt + Verification c)

The Truth in science:

Truth (S. Sem.) = Hypothesis x (Doubt + Verification d)

The small letters “s.sem.” next to the second Truth here stand for scientific semantic truth, and the small letter “d” next to Verification in the second formula stands for the database. However, as all these new phases of changing and developing of Truth still continue to be themselves cumulative, the formula of Truth (S. Sem.) is not THE formula of scientific truth but rather the formula of only the positivist science which reduced science to the set of facts and scientific research to “fact hunting” to use the famous words of George Katona the Hungarian-born American founding father of economic psychology. Now, this general cumulativeness of different kinds and levels of Truth is a new aspect in our train of thoughts, no matter how strongly the concept of double truth cited above hinted at it. As a matter of fact the ideal type of scientific truth – that is, the Truth of positivist science – is situated only on the top of the validity pyramid. But the extended notion of scientific Truth means that we prefer not only the pure – positivist – science but also try to develop coherent logic systems in, of and between the different disciplines and – having accepted that the whole intellectual enterprise came from religious roots – we – climbing up on this ladder – are finally obliged to meet the requirements of “fact hunters”. From this point of view we can distinguish three fundamental levels of scientific Truth. Figure 8 shows the validity pyramid which reflects these levels of – and thus the whole long, difficult and fruitful but today frequently rejected – history of human life and the human mind. The reason for rejection is clear: who wants to see the retrogressive reality of the period of mankind we live in now and are suffering from today?
This pyramid tells us a lot not only about the building of different kinds of validity or truth as a product but about building in the sense of the process of mankind's Enlightenment as well. The first form of Truth was the pragmatic, the second one was the syntactic and finally the third one was the semantic. And each of them used the previous kind of truth as its foundation. After this itemization we will return to our Venn diagram on double Truth and – by further developing it – find the relationships described in Figure 9. It is not difficult to notice that science has the most powerful and stable system of Truth because it requires – at the least a preliminary – belief in its hypotheses, then coherence among its statements and finally a sufficient number of facts which connect the system of ideas with perceivable reality.

That is, science requires a triple Truth which has different levels and different extensions. Science as the most demanding form of consciousness has at the same time the narrowest extension which is a quite natural and understandable state of affairs. The number of beliefs on the other hand is limitless especially if we go beyond the historical religions as well and take into consideration all kinds of the earliest beliefs of prehistoric men. Furthermore the number of more or less coherent systems is also enormous. But they are situated in the Validity Pyramid between the pragmatic and semantic systems of truths. Thus Figure 9 can be envisaged as a hill or mountain on the top of which we see the greatest scientific achievements, whereas the basic form of consciousness continues to be religion and – to a lesser extent – philosophy which lies in between (Magyari Beck, 1996). It is also worth mentioning that a number of contradictions between these forms and levels of Truth can be identified as a powerful
engine, the moving force of any intellectual development. This was also the case with double truth in and during The Middle Ages.

Figure 9. The comparative extension of three kinds of Truth

So the comprehensive formula of scientific Truth can be summarized in the following way:

**Scientific Truth = Truth (RP) x Truth (P. Sin) x Truth (S. Sem.)**

If any of the three factors of this logical multiplication is absent – equals zero – the discipline in question is not valid. This statement is obvious and needs no further explanation. But nevertheless: *Scientific creations are based on a sufficient number of data; theses of scientific creations are well structured; the investigators believe in their scientific results and can defend and/or develop them in real scientific discussions.* Although this is already a commonplace, many directions could not meet these requirements in the past. For example – as we have already mentioned – scientific positivism reduced the Truth to successful fact hunting; some representatives of creative studies celebrate the set of single ideas, neglecting the norms of coherence; the market approach to scientific studies has put into parentheses the Faith of investigators. A growing number of scientists are ready to work for good pay in a half-hearted manner, serving the trendy fashions, not to speak of the lack of morality and further values which must characterize every creative achievement. Later on we will return to this problem. We just mention here – as the last remark in this subchapter – that in one of our works we coined the term Creato(PATHO)logy to
designate pseudo-creative results (Magyari Beck, 1982). You will not find this term on Google because the new theories of creativity and creative practices are so permissive in order to be good followers of the generalized genetic model of mutations and get as many new ideas as possible that they usually neglect the aspects of quality. We are going to return to this problem later on.

**Disciplines and their competition for the creativity question**

As we have already mentioned, scientific disciplines were the results of disintegration of philosophies as philosophies were the results of disintegration of religions in their secularized interpretations. However, the cradles of original religions and philosophies still exist in literature and we can return to them for help as – paradoxically – pools of new ideas in philosophy and science. Just for the sake of analogy, we had a similar disintegration in politics where the nation states distributed mankind mostly on the basis of language, while the cultural cradles preserved themselves and we call them cultures. Both smaller disciplines and smaller nations could better cope with the problems of their domains and territories. These analogous intellectual and political entities proved to be so solid that no forces have been able to destroy them. Disciplines and nation states have their flexible but clear-cut borders made – in the case of scientific disciplines – of domains, methods, institutions, groups of specialists, morality of practice, history and so on, whereas in the case of nation states they are made of the territory, language, common past, goals and values which led to the same separation. Just as there has always been strong competition among the disciplines for ever newer subtopics, in the same way nations compete for larger territory and influence in the world.

*Returning to the creativity question, we have witnessed an especially big contest among the disciplines to appropriate the theory of creativity as a property of this or that discipline.* “This or that” here means in fact every science and art. The reason for this state of affairs was that any sciences – and also arts – have their own history, which does not allow neglect of their concrete discoveries and inventions, not to speak of the laws and rules of creativity. That is, it is impossible to avoid the conclusion that every science and art has its own contribution to the general view of creativity. Although this conclusion was clear for almost everybody, its voice sounded too softly. Finally it was psychiatry and psychology which were the most powerful competitors and were
able to swallow the subject matter of creativity. Why? Well, simply because the voice of psychiatry and psychology in this battle was much louder than those of the other competitors. Not because they had better arguments but because of the strident intellectual choir and orchestra of liberalism which raised psychology and psychiatry into the position of the basis of all social phenomena, including the most important one, namely creativity. The central thesis of liberalism as regards individual personality as the main source of any human achievements voted and still votes for an almost limitless freedom of individual personality. Psychology is beyond any doubt an important science. But ideologically it was brought up by the midwife of liberalism. Today genetics and universal Darwinism have entered the picture. But this will be a topic of the next chapter.

The need for an interdisciplinary discipline of creativity

But this is not the end of the story. Although psychiatry and psychology – and currently universal Darwinism – were able to collect a great number of data about creativity, these results had and have to be corrected substantially in the process of explaining the real life facts and phenomena of creativity (Magyari Beck, 1981 and 1988). The corrections came and come from the empirical history and analysis of actual discoveries and inventions and from many other disciplines which cannot do anything with isolated laboratory experiments conducted by psychologists on birds, rats, apes, children and average adults who were required to solve in these experiments different puzzles which rarely resembled real creations. Not to speak of the fact that a false concept of “creative problem-solving” was coined by psychologists who made a distinction between productive and reproductive thinking and regarded as creative only the so-called productive thinking where no transfer occurred (which is nonsense). This happened in the first third of the 20th century. It would be very easy to prove that even the greatest real art works, discoveries and inventions in the history of mankind were produced through the transfer of ideas, that is, they could have been called “reproductive” in terms of psychology. The theoretical and terminological contribution of psychology to the understanding of creativity was nevertheless enormous but seldom applicable in practice. Although we do not share many fundamental ideas of universal Darwinism – which builds itself far beyond biology as well – one of the best contributions to the studies in
creativity was made in this respect by the theory of memes where the transfer—in a genetically biased term, “copying”—was accepted as a creative act.

To establish a complex independent science of creativity is an age-old aspiration. The idea of creating a complex and independent discipline of creativity emerged repeatedly in a great number and in a large variety of social, political, cultural and historical circumstances. People always knew—or at least guessed—that their fate hinged upon the outstanding problem solvers. So it would have been advisable to influence them somehow. The general reason for these attempts could also be found in the sometimes catastrophic consequences of expansion by such intellectual “empires” as the arts, religions, engineering, philosophies, ideologies, sciences, occultism, politics and so on. The science of creativity—in this context—is still a gap in our knowledge. But let us be more concrete. We do not need a mysterious, ill-structured, limitless, that is, alleged science of creativity. We need a DISCIPLINE of creativity in the original meaning of the word “discipline”. That is, we need a well-justifiable and well-arranged order of empirical observations and fruitful experiments on well-defined phenomena of creativity and also well-disciplined theoretical thinking in this field. This is why I prefer the term Creatology which indicates and suggests these basic norms of a serious scientific enterprise. These many “well”-s should not be the signals of conservatism.
8. The Pragmatic Phase of Creativity
Methodological Revolution

The Truth – or validity – of pragmatism

The Truth of pragmatism is the success itself that is the difference between the result and the goal:

Success = Result – Goal;

Success = Practical Truth;

Practical Truth = Result – Goal.

If “result > goal” then we are positively successful: Practical Truth – anticipated outcome – is achieved beyond our goals. This needs help from inner and/or outer conditions unnoticed before the act. A great number of creative products fall in this set of events. Recall the discoveries made also by chance. But if “result < goal” then we are not successful because the result is only partial in comparison with our goals. In this case we must either give up and be satisfied with a partial achievement or should make an additional effort or finally have to wait for better conditions. If “result = goal” then we achieved the goal without being either successful or unsuccessful. We hit the target and that’s all. Taken together these three formulas depict a scale of positive and negative success with a zero point in its middle. This scale can be applied to a number of concrete facts but is inapplicable under other circumstances. Everything depends on the measurability of both goal and result independently of each other. Do not confuse religious Pragmatic Truth either with pragmatism or with Practical Truth. Pragmatism is a philosophical school, which concentrates on human behavior and has as its special normative prescription religious Pragmatic Truth on the one hand and Practical Truth on the other hand. Thus both faith and success can be found and discussed within pragmatism. Both faith and success have elements of psychological – e.g. visual, fantasy or other – forms of anticipations. Both can be confirmed or falsified only after the deed. And – finally – both are excluded from the classical concepts of truth.
The sources of pragmatism

There are two main sources of pragmatism in Euro-Atlantic culture. One is American – more exactly North American – the second is European. The two sources have deep differences. Let us start with the North American pragmatism as it appeared a little bit earlier in historical time, at least seemingly. European pragmatism came later, again at least seemingly. To understand the psychological roots of North American pragmatism let’s put ourselves in the shoes of the first European immigrants on the American continent. I am sure that all of my readers enjoyed Western films in their youth. In these films we could see – among the dreadful quasi-cowboys who were rather robbers – well dressed gentlemen and ladies as well. They walked along the sandy streets of villages and towns where the wooden houses were built not according to the strict geometry of Roman logic. Rude and dirty “cowboys” appeared on horseback from time to time and attacked the banks, killed the owners and clerks then disappeared immediately. Every viewer from civilized parts of the world could feel that there was an enormous gap between the civilized gentlemen and ladies on the one hand and the anarchic social and urban order on the other hand. Thus the establishment of civilization was an extremely urgent task in North America at that time. The sophisticated theories and arts could only be disturbing noises – in the sense of telecommunication – in those circumstances. The problem facing American society was first and foremost definitely pragmatic.

Entirely different conditions existed in Europe in say the 19th century. Europe was a highly civilized continent many centuries before the discovery of the New World. However, North American radical pragmatism proved to be an extremely powerful challenge for comfortable Europe. Soon the USA surpassed the European, culture-based civilization. As the culture can after a while be a powerful obstacle to the development of civilization, because culture is a human-centered system, whereas civilization is an – often antihuman – machine-based and economically seemingly more effective social order, the only way to compete with the USA seemed to be to first destroy the traditional European culture. It was Fascism and Bolshevism which tried to cope with this difficult task and created in the place of culture first a cultural emptiness – a gap – then a modern civilization which hung in a cultural vacuum.

The result of this strategy proved to be almost fateful even for American liberalism itself which – on the contrary – needed rather a more solid cultural underpinning. By the way this is why European scholars and artists were
welcome in the States as emigrants from the Old Continent just before and during the Second World War. The West was able to use the old method of “divide et impera” successfully. The clash of Fascism and Socialism in the Second World War with the assistance of western powers led to the collapse of Fascism on the eastern front. And later on socialism also collapsed. The replacing of culture by civilization in Europe is under way now – at the beginning of the 21st century – by making use of the liberal economic strategy. However, while the liberal strategy was quite natural and thus spontaneous in America, it works in Europe in an artificial way. Liberalism in the United States of America came originally from below. It was only later that the liberal and pragmatic philosophers – as the representatives of the New World’s spirit – started their work. But in Europe it was the philosophers and then the politicians who imposed liberalism on the traditionally nationalist European societies.

**European intellectualism and American creativity**

European pragmatism now has a post-intellectual nature. In a sense it is an alarm signal about the conditions on this old continent. It could be observed in the historical past that cultures as a rule started their lifecycle with practical pragmatic phases of self-establishment and ended their history returning again to the hectic trial and error activity in conditions of general chaos. Europe has always been mainly an intellectual continent except for its very beginning and today’s beginning of the possible end. However in the top period of European intellectualism – namely from the early 19th until the middle of the 20th century which was one of the golden ages in Europe – all the novelties in technology, medicine, organization, education and other practices had their carefully rational, scientific basis. And this basis still exists in the domains of the so-called classical practices. It was quite normal for European thinking that to do anything successfully, one must first study the processes to be handled.

As far as American pragmatism is concerned, the method of trial and error was celebrated as the most creative one on the New Continent. The trial and error method needs first of all much energy, courage and not so developed intelligence. This is why education in the United States was and is not so rigorous. It is true that the United States of America bought a lot of human intelligence and *European-type intelligent creativity* especially just before the
Second World War and later on, via the brain drain, however, the golden age of European mentality is over on the other side of the Atlantic for today. What happened to America? There could be many answers to this question. One of the possibilities was expressed in the title of Allan Bloom’s voluminous book. This author published his work entitled “The Closing of the American Mind” in 1987 (Bloom, 1987). But another and perhaps a better explanation is that America found her adequate way of developing via creativity which is very different from European intelligent creativity and seemingly much more effective economically than European productive thinking. The American type of creativity went back to the principle of trial and error. That is, the United States is always in between the beginning and the end of its history without enjoying the intellectually consolidated “middle age”.

The other source of cultivation of the stochastic changes in behavior and thinking originated paradoxically from Europe and can be found in the Neo-Darwinist genetic model according to which the genes permanently generate mutations defined as the genes’ random changes. Although these changes have their causal background no stimulation on the part of the whole biological organisms helps the emergence of mutations. That is, mutations are the manifestations of the genes’ autonomy. This is why these changes are called random (Dawkins, 2007). And this generation and subsequently the selection of useful outcomes by the common forces of both organisms and environments propels the adaptation and – under favorable circumstances – development of living systems.

It is already clear that Neo-Darwinism was the chief source of the modern probabilistic ontological view of Nature and also cultures. Shortly after the synthesis of Mendel’s works in genetics and classical Darwinism, an American psychologist Thorndike extrapolated the principle of random mutations to the realm of animal and human overt behavior (Woodworth and Schlossberg, 1961). Later on N. R. F. Maier coined the term “mental trials and errors” (Maier, 1930). Then a lot of steps forward were taken in this direction. The most recent step was that of Richard Dawkins who coined the new term “meme” (Dawkins, 1976) in all likelihood so as to be able to find a link between the basic biological phenomena and the basic intellectual – that is, problem-solving – behavior in the remote future. But the problem is that meme – which imitates the pronunciation of “gene” and is also the first syllable of “memory” – proves to be an extremely vague term. Although Dawkins defined it as a unit of culture, the problem of
empirically meaningful definition is still waiting its solution, especially when we try to apply and use this notion in a tangible way.

Is meme a paper, an invention, an idea, a book, a culture, a theory, a model, an experiment, a building, a plan of the same building and so on and so forth? No satisfactory answer exists. However, a big but double-faced step forward was taken before the appearance of meme theory by Alex Osborn and Sydney Parnes (Parnes, 1992). They regarded a new idea as the element of creativity without even speculating on the above-outlined problems and disciplines in a too abstract way (Osborn and Parnes were first of all practitioners who created creative techniques). The new idea is the seed of creative reasoning no matter how it is expressed. You can give to it the form of positive statement, a question, a critical remark and so on. But on the other hand the set of these elements – namely ideas – has an atomist character as ideas can be structured and restructured almost endlessly. Ideas can behave as genes – or it is better to say: as memes – because they can mutate, they can be mistakes, they can appear seemingly by chance from the point of view of mentality, can be blocked by the environment (even by the idea creator himself) etc.

So the joint unconscious – or semi-conscious – effort of synergy among Neo-Darwinism, American psychology of problem-solving via trial and error, creative techniques (first of all brainstorming by Alex Osborn) and the model of stochastic events and so on gave a certain meaning and usefulness to meme. However the most powerful support of these schools in the creativity question came not from the abstract theories but from the practical, pragmatic success which these coherent approaches could achieve together. Today the most frequent – or often the only – question concerning any scientific result is its usefulness or usability. So we live now in a funny one dimensional culture which tends to neglect all other value aspects except usefulness. However it is true beyond any doubt that abstract theories and their synergy and coherence (syntactic truth) can give an excellent background to any practical pragmatic enterprise.

**The end of European intellectualism**

Here we will analyze two causes of the collapse of European intellectualism. One of them is connected with the emergence of the great multinational firms which are now more powerful than not only the European nation states but the
whole of Europe and many of its former colonies taken together. The great
multinationals prefer and finance the Osborn-Parnes-type methods which are the
fruits of Western stochastic models applied in our domain. The European-type
intellectual creativity seems to be losing its cultural and financial background
and is gradually disappearing. Thus this trend is not a result of a spontaneous
process or change of the zeitgeist. This trend is a result of competition between
the private sector in the economy and the nation states which can be observed all
over the world. We live in circumstances where the nation states have already
lost their financial bases, while the private sector in the economy on the other
hand does not have the rights and means necessary for creating any – badly
needed – multidimensional social order, which was originally the function of the
weakening nation states.

The United States of America is a special case because the random way of idea
generation is a part of English and especially American culture and civilization.
*American people are as a rule active, they are continuously ready for idea
generation whether the results are bright or not (thus the most revolutionary
part and aspect of creative techniques like brainstorming is not idea
generation but a system of filters, the selection of ideas after their
accumulation).* But as it is impossible to continuously produce ever newer ideas
at the workplace in organizations it was necessary to introduce time and space
limitations of creativity in all firms. This explains the practice and term of
creative techniques. At an appointed time ordinary employees gather in a room
of the firm to generate and pre-select ideas under the supervision of a facilitator.
Then the participants go back to their jobs after the session and continue their
often dull work. The idea supply created during the session is analyzed and
selected by the management who – to speak in terms of market economy –
represent the demand side of this process.

Another impulse of counter-intellectualism came from the European culture
itself. As far as the European intellectual creativity is concerned, this was not the
job of otherwise ignorant everyday employees. Europe preferred the geniuses –
or at least simply the well-educated talented personalities – in her history, no
matter to what extent they were persecuted in different political and social
situations from time to time. One of the first reactions to the attack of American-
type anti-intellectualism was the European-type anti-intellectualism developed
in Friedrich Nietzsche’s works. That is, Europe – as we saw earlier – not only
tried to defend her style but was open towards American influence as well.
Perhaps one of the most important indicators of this openness was European activism in art (in Hungary see the works of the writer and painter: Lajos Kassák), futurism (especially powerful in Russia before and just after the socialist revolution in 1917), the postmodern in art and philosophy, the methodological anarchism of Paul Karl Feyerabend, a new style in philosophy which reminds us of the mere idea generation without an appropriate logical filtering and structure (e.g. Martin Heidegger’s confused and confusing writings and political behavior). In Hungary two Hungarian philosophers: Lajos Szabó and Béla Tábor showed in a short book how it was the European mind and European intelligence which were also responsible for the suicide of European intellectualism and not only or mainly the forces from the cultural and geographical environment (Szabó and Tábor, 1936). The final outcome was that American-type creativity occupied the vacuum which has been left by that suicide. Nor should we forget about the European Romanticism which almost destroyed the impressive theoretical and logical edifices of European Enlightenment of the 18th century. European Romanticism played the same role in Europe that the stochastic and random model of ontological being and the trial and error principle of human and animal behavior played in North America. So let us examine European Romanticism at least very briefly.

**Romanticism as the mover of European anti-intellectualism**

The 18th century was not only a century of Enlightenment, it was also the starting period of its own diametrical opposite namely the anti-intellectual movement of Romanticism. *Although Romanticism is still regarded as a style in the history of art, it was rather a deep anthropological conception. Enlightenment – as we all know – celebrated human rationality, while Romanticism did the same with emotions.* Passion was everything for the early Romanticism. While the Enlightenment was a movement focused on law, rule and coherence, Romanticism paid particular attention to the exception, that is, it was a person-centered view. No wonder that while the main genre of Enlightenment was philosophy, Romanticists were first of all artists who nevertheless opened doors for new scientific subject matters and disciplines. According to Romanticism, the emotionally stressful – and usually irrational – geniuses created and create new domains, styles, genres, principles of morality (sometimes anti-morality), opuses, and so on. No distribution of labor was acceptable. A lonely, unbalanced and suffering genius is always the main issue.
The greatest heroes, the model-personalities of Romanticism were the historically conspicuous “entrepreneurs” like Napoleon Bonaparte just before the flourishing of the new style after the well-balanced Classicism of Enlightenment.

We have at the least three powerful versions of Romanticism: Social Romanticism (e.g. Victor Hugo, a French writer), which led to the ideas of equality, fraternity, human rights, public health, wealthy society, uprisings, revolutions and so on. Another type of Romanticism was the national Romanticism (e.g. Mór Jókai, a 19th century Hungarian writer). Due to this direction we had and have nationalism, nation states, national mentalities and the two world wars and so on. Finally we should not forget about the liberal Romanticism (an English type Romanticism, see the books of the Bronte sisters), which exaggerates the values of freedom, individualism, created psychoanalysis, the literature of crime and horror, bounded rationality in economics, the philosophical postmodern, nonfigurative art and so on. While the original liberal Romanticism concentrated on the life and fate of quality people, crime and horror did the same with morally tainted and deviant figures. These all are important from the point of view of the history and essence of creativity and especially Creatology. All these considerations again and again show that creativity is not merely a matter of simple ideas. Creativity remains the question of opuses in a wide sense of this term. For example, somebody’s life can also be an opus which gives a model to the members of a whole culture.

From creativity to innovation, Joseph Schumpeter and creative techniques

Now, creativity is identified also with the mutation of memes. However, as mutations are the mistakes even on their biological level of genes and only a few mutations can be acceptable by an organism and its environment it is easy to say that all of us are creative, because everyone is able to generate unpredicted stupidity. As we have already acknowledged in the present work, Dawkins noted in one of his works that gene mutations have their strict biological causes and mechanisms. They are random and unexpected only from the point of view of the organism (Dawkins, 1991). This is a very important statement. The same should be acknowledged in the case of the mysterious memes. In other words, we can – and therefore should – nevertheless study the reasons and mechanisms of the creative process even if we take as examples the stupid
**ideas as well.** Another inference which can be drawn from the above parallel between the genes and memes is that creativity is first of all a large supply of novelty (mutations). Quality does not matter. It seems to me that this definition of creativity is responsible for the economic and social chaos that we are suffering from today. The otherwise great economist Joseph Schumpeter was the “founding father” of the present chaos because it was he who first introduced the notion of innovation in a *pars pro toto* manner and turned no attention to the more complex phenomena of creativity. Yes, innovation is a rough simplification: a reduced concept and reduced phenomenon of creativity.

The idea as the unit of creativity is beyond doubt an attractive decision. But why is it so? Civilization can somehow be measured, e.g. by counting the number of roads, cars, buildings, towns, laws and so on. However the culture is not a measurable phenomenon for the time being. Can we use such terms as “four intuitions”, “six emotions”, “five anxieties”, “nine attitudes”, “twelve distresses” and so on? Of course we cannot. Cultural phenomena seem to be analogous, whereas those of civilizations are digital ones. But the number of ideas is countable. Only the method is a little bit unusual. Biology as a science was not started by investigations into single cells. Physics arrived at atoms – as scientific entities – after a long period of analyzing the celestial bodies and other macro phenomena. But the so-called interdisciplinary science of creativity began with studying single ideas as the elements of creativity. Surely that is strange!

So it would be better to start studying creativity with investigations into the macro phenomena of big creativity. Sciences always launched their investigations with clearly visible big systems and only later on reached the multiple levels of elements. It is the practice of invention which begins its job the opposite way with the elements of future constructions: machines, organizations, planning the processes, etc. *Thus we can conclude that today’s creative studies are busy with inventing creativity well before the scientific understanding of its nature. That is, the practice of creative techniques pursues rather the goal of invention than the goal of discovery and understanding. Not to speak of the fact that we – under the umbrella of creativity – institutionalize the right to stupidity and mistakes. On the other hand the rough dichotomy of idea generation and idea selection introduces the institution of censorship in a semi-hidden way referring to the fundamental biological processes and structures of the biological organism.*
9. Memes and Creativity

A Critical Approach to a Fashionable Proto-science

What are the memes?

We have frequently returned to the memes in this work without a more careful evaluation of the proto-science called memetics. This forbearance from a critical assessment of a proto-science seems a reasonable decision because the only thing we can do with a proto-science is examine its perspectives. We will try to do this from the point of view of the complex, interdisciplinary Creatology which is based strictly on the empirical facts of creative functioning. First of all let me say that memetics claims to prove the viability of genetics as memetics can be regarded as a mutation of the fundamental ideas of genetics, which are themselves together a meme for the proto-science of memetics. In this respect genetics is a special case of memetics which arose from genetics. But what on earth is the meme? According to Dawkins – who was the famous coiner of the term meme and founding father of memetics – memes are the units of culture. However this is not a definition. This is rather an Aristotelian genus proximum which is nothing else than a generalized and more abstract term of meme without any suggestion of the closer description of memes which would distinguish them from other kinds of units of culture. E.g. German culture can also be a unit of culture taken in a very wide sense or African culture can also be a unit of culture. On the other hand, an idea, a book or a discipline are also units of culture. Culture is a wide and deep term having a lot of variation and many stairs on the ladder of abstraction.

Although the (ability of) replication and mutation of the units of culture are important facts in Dawkins’ theory he did not illuminate them as parts of the definition of memes. Replication, mutation of memes and also their being permanently selected are rather parts of Dawkins’ more elaborated model of culture. This can be recognized in the way Dawkins treated these happenings. Though Dawkins spoke of different replicators, and memes are only one kind of them – that is, the replication appears in his works as a genus proximum as well – this whole story appears only in the words. As far as the actual train of his thoughts is concerned the replication and mutation of memes almost have the same extension empirically because – according to his observations – the
memes’ proliferation rarely actualizes itself through their exact replication. It is rather the mutations by which the memes proliferate. Dawkins even admitted that Darwin himself would not have recognized his original ideas – which are now regarded as mostly refutable and mistaken – in the works of today’s Darwinists (Dawkins, 1976). Well, the question arises whether it is then reasonable at all to speak of the replication of memes. Perhaps it would be more appropriate to speak of proliferation, a term which expresses in *original* memetics the synthesis of repetition and variability. And memes are not the instances of special cases of only replicators. **In other words culture is an organic unity of heritage and innovations.**

According to Susan Blackmore – a pupil of Dawkins and as a pupil she reasons in a slightly simpler way than her professor – meme is any *information* which can produce its copies. The sharp notion of copy does not allow any interpretation different from exact imitation. However it is true that we can speak of good and bad copies. Why not? Here the “information” is the *genus proximum* and “copy” is the closer description – *differencia specifica* – of meme. This is a fine definition formally. But as the word information does not have a plural we should speak only about the pieces of information. However the term piece – in this context – is also terribly vague. Thus again we cannot apply this notion in real life contexts. Methodologically it is impossible to count the pieces of any information.

Information can nevertheless be measured in a roundabout way by the formula of entropy, first of all in technical systems of telecommunication: the bigger the disorder of a closed system which information can eliminate, the bigger the information in question. As this measuring would be very costly on the level of social sciences, it has been rejected by social scientists as unusable. Now, what kind of copying can occur: e.g. oral repetition, memorized, written, graven, technical and so on? Learning – by mere memorizing – is a sort of meme proliferation via its copying. To produce exact copies of information by learning through the method of repetition was used by pupils mainly in the past. However the exact copying excludes any creative education. This is why the direction of memorizing in education was rejected many times. But because of the inborn unreliability of human memory, other forms of copying – first of all technical ways – were and are preferred in different civilizations.
Types or sorts of memes

Well, two outcomes are possible. If the memes to be proliferated are healthy ones, the process is beneficial. If the memes to be proliferated are bad ones they can be called viruses of the mind. **If we evaluate memes – in the Darwinian way – from the point of view of their ability to survive and proliferate, then any of the two possibilities described above are acceptable no matter whether they can be evaluated as, for example, morally good or bad.** To take an extreme case, even Hitler’s ideology and influence was good in a Darwinian sense as it proved to be very successfully copied before and during the Second World War. Blackmore tends to think that memes as a rule are dangerous things. But the consequences of this view are even more dangerous memes – to use the terms of memetics – as in this way we arrive at anti-cultural attitudes – that is, at anti-memes memes – in the framework of memetics. Moreover the more educated a person is the more dangerous he or she can be for society. Even the people’s ability can be labeled as harmful.

Here it is important to note that copying is dependent on the substance via which the pieces of information proliferate. If we take memory, its capacity depends first of all on personality. E.g. a well-motivated problem-solver has a better memory than a mentally lazy man. As a result, what can be called meme in the case of one person cannot be called meme in the case of another person. Of course we have some difficulties with the notion of memory as there is a psychoanalytic hypothesis according to which there is no information which we forget altogether. According to psychoanalysis to forget something is only to push it away from the consciousness. The subconscious instances preserve all the information we have ever received. On the other hand being a meme also depends on the historical development of substances. Information which can be copied or proliferated by certain technical devices cannot be copied or proliferated by other technical devices. Thus again where is the selfish meme which is copying or proliferating itself using its own resources?

Mutation of memes and the psychology of reasoning

Memes can mutate like genes. **The mutation of memes leads to new memes. Here we have arrived at the theory of creativity in the framework of today’s universal Darwinism. But if mutation is a mistake, any act of creation is a mistake. Now, the problem is how these mutations – that is, mistakes – occur.**
The answer of universal Darwinism is: by chance. Dawkins was more precise in noting that although mutation is a mistake from the point of view of the organism it has its rationally comprehensible causes (Dawkins, 1991). What are these causes on the level of memes? Universal Darwinism remains silent in face of this question. Let us turn to classical psychology. Here we find a number of problem-solving methods discovered within the framework of the chapter on the psychology of reasoning. The most ill-structured among these methods is trial and error. In fact all other methods of problem-solving range from trial and error in one extreme of the scale through the different methods of partial insight to the immediate full insight method discovered first by Gestalt psychology. Why should we forget these results of psychology and reduce our horizon to the mere chance events of meme mutation? It is true that the discovery of penicillin by Alexander Fleming happened by mere chance, but this scholar had a clear goal of finding effective antibacterial medicines. Without this goal he would not have been able to evaluate his finding as a discovery. That is, he had a problem and – as an important part of the problem – a value-based goal. And this is the case in all kinds of problem-solving – that is, creative – activity. Thus in this respect memetics – with its chance theory – sets us back far before the results of the psychology of reasoning which were achieved at the beginning of the 20th century.

The third member of the blessed trinity: selection

Let us make a short overview of the selection process. The memes and their mutations are the supply side of the story. On the other side selection processes can be found. Thus the whole matter reminds us of the market principle. (It is possible that this hidden market model makes memetics so fashionable.) Now, what is the selector? Dawkins coined the interesting term memeplex which is a special case of the “complex”, that is, the system of memes beneficial or detrimental for the new meme. But it is very likely that memeplex is only the first stage of selection which works according to the principle of coherence. The meme, which fits into the memeplex where it entered – via mutation or otherwise – will survive. However, it is not the only stage. Roughly we can distinguish inner and outer filters. Inner filters work within the system – for example, an organism – whereas outer filters come from the environment of the same system. At first glance the memeplex belongs to the inner filter alone. But the other holders of the memes – especially if they are people – prove to be
filters too, on the basis of their memeplexes. Now the question arises: Where can the material bases of memes be found? *If we concentrate only on the memes, the proto-science of memetics appears to be a revival of the Cartesian dualism of body and soul. And as this dualism was the beginning of the Enlightenment in the 18th century, it was the cause of the end – the collapse – of the same Enlightenment. How? The answer seems simple: by Romanticism which reintroduced the emotions. And with this the connection of body and reason was reestablished.* And this connection made possible the sciences of human beings or behavioral sciences like psychology, anthropology, economics, and so on. In comparison with those sciences, *memetics today levitates in empty space.*

As Susan Blackmore and Daniel Dennett rightly emphasized in their excellent presentations, memetics is an attractive proto-science because its basic principles embody a very old ideal of thinking, namely the economically most advantageous way of theory building. We need only a couple of terms and principles to explain a huge amount of facts connected with meme, mutation and selection (and “must” the favorite word of Blackmore). Yes, the epistemological principle of being as economical in thinking as possible has its long past because it was preferred in alchemy and known as “the philosopher’s stone” which could produce anything. But is it a correct statement that memetics is able to explain the facts of creative reasoning? *What creative products were analyzed by memetics and how? How can a value-neutral theory like memetics define, identify, analyze and explain the products of creativity, especially the products of big creativity? It seems to me that memetics is blind in this respect. How can it summarize the features of great painters, architects, musicians, scholars, philosophers, styles, schools of arts and thinking?*

What is truth, beauty, ugliness, usefulness, etc.? To my mind any studies in creativity should start on the level of the above-mentioned facts and values. Were Descartes, Dante, Goethe, Wagner, Liszt, Smith, Ford, Aristotle, Darwin, Einstein really meme machines? Why are the great scientists – as for example Richard Dawkins – afraid of using the social paradigm for explaining social phenomena instead of always hiding behind the metaphors of a mechanical and biological way of thinking? I mean: mechanical and biological paradigms have every right to scientific explanations within their domains, however they become only artistic metaphors beyond them and lose their explanatory forces. *It is true that we people are all creative however the instances of big creativity*
exaggerate the characteristics of creative product, process and ability like a microscope. We will never understand small creativity without first investigating the instances of big creativity.
10. Terminology of the Humanities, Natural and Social Sciences, Some Remarks

Terminology in general and in the humanities

Terminology is always a great problem in different sciences. Any new terminology is a new language. But these languages can be artificial creations also and develop together with the emergence of new discoveries and/or inventions. The general rules of terminological development do not belong to my scope of competence because I am not a linguist, so I will make only a couple of remarks necessary for us concerning this question. Firstly a rank order can – and therefore should – be established between the sciences and humanities in respect of the importance of terminology. It seems to me that it is the humanities which need a minimum of special terms. The closer the assortment of notions of the humanities to everyday vocabulary the better the humanities can fulfill their function as a bridge between the common sense and scientific way of reasoning. This is why the terminology of the humanities spreads from culture to culture mostly through translations.

It is an interesting fact that everyday languages themselves can influence the humanities. Or to express this state of affairs in another way, languages are in fact mental programs, which determine the reasoning of the people who speak them. An Englishman thinks differently from a Chinese person. For the sake of examples, the English word “business” has more than one meaning. Business means exchange and also doing our things. That is, our activities have exchange nature in every case. Or the English word “experience” means being familiar with facts and being impressed by the events in either positive or negative sense. That is, we should concentrate first of all on the facts which are also the sources of emotions (one of the deepest levels of our self-regulation). Or again the English word “consumption” means the satisfaction of our needs and also the destruction of things and other entities. That is, Nature can be destroyed through consumption. What a clever message hidden in the language! Or the English word “race” means both the species and competition, which says that competition is a normal relationship between the species. It would be possible to cite more examples but the above-mentioned ones are enough to indicate at least partially the spirit and wisdom of English culture.
Similar analysis of other languages’ vocabulary will be able to disclose the programs hidden for everyday thinking that the common parlances contain and that influence their speakers’ mentality and behavior. Thus, in a sense every language is a kind of terminology which raises certain problems and suggests certain solutions. This is why the preservation of even the smallest language is a very important issue. In general, the diversity of languages equals the diversity of programs by which we can raise and solve more problems than on the basis of a few leading languages. Not to speak of any particular language. In any historical period a competition between languages can be observed. Usually those languages win which belong to the leading cultures and civilizations. But no language had, has or will have a final victory in this race because the rank order of cultures always was, is, and will be in the process of change. Today we live under the umbrella and influence of the English language, but not forever. English will be the leading language till the English culture and civilization encounters its limitations. Then history as usual will continue its existence successfully if and only if we find other cultures and thus other languages which provide us with other programs suitable for the new situation. But sciences need their own exact vocabulary.

Terminology in the social sciences

However, even in this area the problems are different. It is a rare case in the social sciences that we find phenomena which were never known by anybody thinking and behaving amongst the people. So our task here is mostly the interpretation of already familiar things and processes and the issue is finding the nets of events and notions where those things play their important role. This task is usually solved by giving new definitions to the old verbal expressions. The basis of the new definition can be picked up from one of the everyday meanings of the word in question and refined in some respects that are important for the domain. For example, the term “viruses of the mind” was coined by Dawkins as we do not have any expression for the harmful ideas or memes. So to denominate the harmful meme as analogous to biological viruses Dawkins took over the term “virus” from medicine and added to it the word “mind”. I myself coined terms for use in Creatology as for example “Creato(PATHO)logy” which denotes the set of serious mistakes committed anywhere in the domain of creativity, e.g. producing new weapons of mass destruction, which are of course scientific results but are not entirely creative
e.g. from the moral point of view. Or “Eco(nom)(log) y” which denotes the logical sum of economy and ecology. This term is useful when we wish to emphasize the human factor behind and above these components for which the whole enterprise of economy and ecology should exist. All in all the most important issue in social sciences is definition and not the new verbal expression. As for the terms and definitions in social sciences they spread from culture to culture also mainly by translation.

**Terminology in the natural sciences**

The specific feature of **natural sciences** is the absence of the phenomena to be denoted in this or that domain in the early phases of scientific development. Thus no necessity pushes us towards enlargement of the scientific vocabulary of physics, chemistry, biology and so on before a new discovery or invention appeared on the scene. Naming is a post-discovery process. Of course it is possible to coin a term for a well-planned invention. It is true that the word “atom” was used many centuries before the exact atomic model was created by Nils Bohr. But this is by no means an exception to the general rules, because Democritus – the coiner of the term atom – founded in fact rather a new religion. Why? For Democritus could neither prove nor falsify the existence of the invisible, indivisible and smallest units of matter. The fact that these quasi-elementary particles exist has been a matter of belief for a long time and still is not proved scientifically. Democritus in fact tried to solve the problem of the nature of matter which should have already disappeared according to the old Greek theory of chaos, where a continuous fission would have destroyed even the smallest particles of matter in the distant past. Democritus tried to find a line “on the bottom” beneath which no fission is possible.

But these all proved to be mere speculations. No serious religion has been erected on the atoms of Democritus. People were free to believe in them or not centuries after the death of Democritus. The word “atom” became a scientific term only in the 20th century. Another and more typical method of natural sciences was the coining of terms like “polonium” by Madam Curie. The term virtually has nothing to do with Poland except for the Polish origin of Maria Sklodowska, the famous wife and colleague of Pierre Curie. This small example shows also that the terminology of natural sciences has many different roots and sources, from religion to the national identity of discoverers and inventors. In
the natural sciences we cannot escape the task of coining highly artificial terms. Then these artificial terms wander from culture to culture with the wandering of the new knowledge. On their way, the new terminology enriches the vocabulary of other languages and pushes them closer and closer to each other.

Creatology and its terminology

What is Creatology in this respect? Is it one of the humanities or one of the social sciences or one of the natural sciences? Well, Creatology is an interdisciplinary discipline and as such it has a paradoxical nature. This paradoxical nature shows itself in the terminology of Creatology as well. I would say that Creatology is a large mixture of all these three forms of cognition ordered by the Creatology Matrix. The basis of Creatology is the concepts and phenomena of culture, civilization and history. Although these concepts – and also the concept of creative product in respect of culture and history – are situated at the top of the matrix, they nevertheless give us the frame of reference – within the larger frame of reference of Creatology matrix – from which the other levels of the matrix emerged. This is the overall – and again a paradoxical – situation after our ancestors invented culture, that is, the possibility of inner psychological order within the first humanoids who allegedly lost a large part of their natural genomes. We are born, educated, work, etc. in groups, organizations within the culture and for the culture. Culture supports and nurtures us in order to be supported through our development. Creatology on this general level belongs mostly to the humanities.

The studies in organizations and groups have a double nature of both humanities and social sciences. E.g. the structure of and processes in organizations are often mirrored by the mathematical graph theories. The micro economy can be called a philosophy and a mathematical model of organization. Although these mathematical models frequently have a metaphorical nature due to the lack of correct measuring of many important variables which together composed some mathematics-like functions, they can be the starting points of quantitative studies in this realm. As far as the groups are concerned: while the descriptive methods of sociometry are partially those of humanities and partially mathematical, the methods of interpretation of sociometrical patterns are taken almost exclusively from the humanities. As for the individual personality at the bottom of the Creatology Matrix, his or her investigations have come in part
from “the standard social sciences” (see the term in Richards, 2000) and in part from psychology, biology and medical sciences. Psychology, biology and medical sciences are not totally exact – especially if we take into consideration the so-called small psycho-therapy, which is obligatory at the beginning of and also during any process of curing – however these sciences are by no means humanities.

**Advantages and disadvantages of any mixed terminology**

Mixed terminology of a domain reflects mixed levels and quality of knowledge. Natural sciences represent beyond any doubt the highest level of our knowledge from the point of view of exactness. But on the other hand the horizon is the widest within the humanities. Social sciences are situated between the humanities and natural sciences from the point of view of exactness and horizon. As Creatology contains all three types of cognition, it has to cope with the problem of the interactions of terminologies. First of all we should admit that the differences in levels of exactness and horizon create a huge amount of difficulties and problems in Creatology which would propel the evolution of knowledge in this domain in a powerful way if the development of Creatology – the real interdisciplinary science of creativity – were taken seriously by scholars. It is possible that many scholars reject Creatology – and prefer the otherwise entertaining shows of creative techniques – precisely because of these difficulties. Or it seems to them easier to work in the frameless “science of creativity” or “system thinking” where a huge amount of problems can be avoided and it is acceptable to multiply the study-like literature that is readily marketable in the circles of snobs and average academics.

The terminological development which is the function of knowledge development can be imagined or restored in the following way. The problems usually emerge in the garb of the humanities. Isaac Newton started his career as an essayist in cosmology. Even the natural science problems emerge in social contexts. Again Isaac Newton and Charles Darwin are the most conspicuous examples of this statement. Both scholars were deeply affected by the social environment around them. It is not a rare thing that today’s natural science problems encounter not simply a social environment with its dull commonsense but also the power of exciting professional social sciences. For example sociobiology and evolutionary psychology should confront “the standard social
sciences” which also have their explanations to the questions raised by sociobiology and evolutionary psychology. I am one of those who tend to accept the viewpoint and methods of standard social sciences, as well as the standpoint of the humanities allowing and even admitting that social facts and their explanations compose a qualitatively new level above the biological and mechanical levels and are autonomous as regards the lower levels of the ontological sphere. However I do accept that if disciplines can continue their development despite the monetary limitations we are suffering from in these dark decades, any question will be related to any other questions we were able to raise.
11. Theory of the Creative Product and its Dimensions

A Multilateral Approach

Importance of investigation into the product of creativity

The most important subtopic of Creatology is the problem of creative products. We still have not had a generally acceptable working definition of creative product on the levels of both big creativity and small creativity. I would also add here the level of middle or average creativity – by the way an interesting paradoxical term – which to the best of my knowledge was not even mentioned by Morris Stein, coiner of the terms big and small creativity. Of course it is always a risky statement to say that something is absolutely lacking in science as anything can be put down at the least in handwriting or in a paper or remark unknown by this author. This could – and I am sure still can – be proved by the survey of corresponding literature (Magyari-Beck, 1993; Wehner, Csíkszentmihályi, Magyari-Beck, 1991). Incidentally, although this paper of mine from 1993 was published later than the joint work with Wehner and Csíkszentmihályi, as it was originally presented at the Working Creativity Conference at Buffalo, New York in 1990, that is, it was written almost two years earlier than the joint paper published in 1991, and it was I who gave the idea to repeat my studies because I was interested in the trends which had taken place in the domain of creativity. Interestingly enough the “1991 paper” confirmed the results of my Buffalo presentation. Now, I am not familiar with similar surveys in the literature.

On the other hand, it was the Creatology Matrix which provided the first arguments for the importance of starting – or restarting – studies in creativity with investigations into the creative product, mainly on the level of culture (Magyari Beck, 1976). That is, we creativity scholars cannot and should not avoid building a firm factual basis on which a solid theory of creativity can be erected. But it is impossible to construct such a factual basis without constructing an acceptable working definition of creative results. The whole business of explaining and stimulating creativity is unimaginable without a proper understanding of the results – in the factual studies – and goals – in the normative studies – of creativity. We can also express ourselves in the following quasi-metaphorical way. Although all the squares of the Creatology Matrix
have their own “factual surface”, the creative product is the main factual surface of the whole domain of creativity without which no step can be taken in the domain in question, except for baseless and empty speculations. This is exactly what today’s creativity engineering does on a large scale. By creativity engineering we mean a movement of today’s creative techniques.

Bridges and cooperation between big and small creativity

Now the question arises: what kind of connection exists between big and small creativity? (The middle or average creativity in between should not be forgotten either.) Well, the connection between the above-mentioned levels of creativity is twofold: essential and methodological. As for the essentialist approach, creative products serve the same ends on all levels, which we will soon outline. In the meantime, we clarify the methodological importance of studying all these products of creativity together, but first of all the products of big creativity. Why? Because if it is true that all creative products express the same intention – namely the survival of human and social entities as opposed to the merely biological phenomena which are supported by general biological laws – the creative products on the level of cultures and civilizations serve as a sort of virtual microscope which shows our creative results and their dimensions in an exaggerated form in comparison with the instances of small creativity. We of course have to be realists and study creativity on the lower levels as well, but before being able to meet this requirement it would be advisable to deal with macro levels of our phenomena and only later on turn to the middle or average creativity and take into consideration also the small creativity that is nevertheless important. We must emphasize again and again that the deep nature and functions of creative products are the same on all levels.

This is why average people not only produce creative results on their modest level of everyday life but – in their aggregations – promote creative results on the level of culture as well. Moreover they also accept sooner or later the results of big creativity which essentially meets people’s common needs. In this respect it is not the acceptance of creative results by public opinion that is a mysterious thing, but the delay between the emergence of creative results and their popularity. I would call the cause of this phenomenon of delay: the illusion of size. What do I mean by this illusion? The answer seems to be easy. We are suffering from the illusion of size if we perceive the differences between
the quantities as the differences between the qualities. According to this illusion two persons are two persons – two equal units of mankind – no matter to what extent they are talented, whereas the more talented person is higher in a sense. Here the illusion of size takes the form of the illusion of equality. For the sake of another – more exact – example: those women who prefer, thus select physically tall and big men e.g. as their future husbands just for their size may think that the tall and big men are at the same time more valuable than smaller and shorter people. The structural similarity of big and small creativity does not mean their identity in respect of both quality and quantity of work. The products of big creativity solve the problems of more people and take up much more time, energy, professionalism, social relationships, networking skills and so on than the products of small creativity. The commonality among them is merely structural in terms of problems and their solutions. The importance of small and middle creativity can be clearly seen from the point of view of political democracy. In normal democracies, the politicians compete with each other by formulating the problems of society and giving solutions to these problems. This leads to a very important type of communication where both politicians and people are active: politicians by presenting their programs, people by asking them questions and responding to the politicians’ answers. What should be common between them is the problem pattern. Without this no problem and solution can be discussed.

However, not all democracies are normal. When the glorification of a party and/or its leaders replaces debates on real problems, then we cannot say this democracy is normal. I do not share the famous opinion of Winston Churchill according to which democracy is the best political system in every case. Any democracy needs a culture suitable to it. A lot of democracies in the world are ill in respect of their intellectual capability: some of them are too brutal others remind us of loud fiestas. Similar ideas can be expressed concerning other areas of creativity, like sciences, arts, actions, etc. There we also discuss the problems in the circle of specialists and in circles of everyday people. **Democracy is an important principle in every profession and its applications.** For example medical doctors have to share both the diagnoses and principles of therapy not only with other doctors but with the patients as well. As all forms of democracy in general (politics) and professional life are only institutionalizations of social contracts on different levels and areas, without sharing common problems neither big nor small creativity can exist. Big creativity and small creativity complement each other. **By the way, if we have a lot of people sharing common**
problems and common solutions it will be untrue to say that the sum of their creativity is together a small creativity. This sum is rather another form of big creativity, and possibly bigger than the creativity of leading politicians and specialists. A similar statement can be made concerning middle creativity. Thus the illusion of size suggests that it is not the creator but the crowd that is correct. This is why the more sophisticated solutions of creative specialists are as a rule accepted after a certain delay.

Improvisations versus elaboration on the theory of creative product

Nevertheless several attempts were made to define creative products. At least two main directions can be distinguished in this domain. The earlier one can be called classical and belongs to the disciplines of history of mankind. The later one can be called modern or even postmodern and belongs to the new – as we have already noted: ill-structured – interdisciplinary science of creativity which is not yet Creatology. Let us start the discussion with this later direction mainly because its scholars claim to be the real experts at creativity. Or to be more exact, in this second case we can speak rather of labeling the products as creative with a set of simple or quasi-simple words which can describe this or that side of these products to a certain extent but not always. This is exactly what we call improvisations as these terms seldom have a serious scientific background. They are just “creative ideas”.

Some scholars from the field of the science of creativity found novelty to be the main descriptive word for creations. Often usefulness and preciousness as additional features are added to the notion of novelty. Others preferred to speak of the maintenance of culture or its trends. This approach is allegedly connected with conservatism of view in creative studies. There are specialists for whom creative product is nothing else than the breaking of the rules of a genre like science, arts, algorithms of actions, etc. Many people were and are afraid of losing the control of values over society. These people regard conservative as the chief attribute of a creative product. It is already a commonplace that every culture started its historical career with a moral code, even if it was one as short as the Ten Commandments of Moses. It is also fashionable to speak of growth and development as the most important features of a creative product. As for growth, this parameter is mainly economic but can also be used in a political sense, e.g. when we speak of the growth of this or that
country as regards its international influence. A lot of possible other features of creative products were discussed beyond the above-mentioned ones, as being valuable for and accepted by the society or its competent elite. These and many other vague characterizations are still waiting their theoretical structure and factual basis.

On the other hand the histories of arts, sciences, cultures, civilizations, religions, technology and so on are also attempts at describing, understanding and explaining the chains of creative products which led from the very beginning of mankind up to the present state of affairs. This is a very old engagement of homo sapiens’ mind which continuously works on its self-understanding. Who were we, who are we, and what should we be? Every history is a breath-taking story about the heroic battles between the constructive discoverers and inventors on one hand and the destructive forces of sometimes innovative ignorance which hindered the actualization of possibilities which the different cultures nurtured within themselves. Thanks to these disciplines we have an enormous number of case studies which reveal the nature and process of human creativity mostly neglected by the “science of creativity”. One of the few exceptions is Mihály Csíkszentmihályi (1998). However, no “science of creativity” should renounce the factual materials of creativity which the long history of mankind accumulated.

The overall picture of studies in creativity can be described as follows. In the studies of creativity we have some – often ideologically well explainable – theoretical models without a valid and reliable factual background on one hand and brilliant descriptions and analyses of facts of creativity with no theoretical conceptualizations on the other hand (see Csíkszentmihályi, 1998). The otherwise very interesting investigations into the memes, the idea-generating productive creative techniques belong to this path. But a meme or an idea can only be the seeds of creative reasoning. However they can also be harmful viruses of the mind and destructive ideas. I do not think we can accept these mental products as creative ones. The main issue must be the constructiveness. It seems to us that the idea-generating phase – improvisations – concerning the problem of creative products is over, especially if we take into consideration the standpoints of the above-mentioned studies in history of art, sciences, philosophies, religions and so on. So it is high time to draw a more comprehensive picture of the creative product at least on the level of cultures and civilizations, even if it is a preliminary one.
Otherwise we will remain stuck in the period of mere improvisations instead of going ahead to the period of elaboration of important details in our domain. My proposal would be to start with the common section of some notions partially cited above. See the result on Figure 10.

Figure 10. A multilateral approach to the creative products

The Structure of Terminology of Products on the Level of Culture

The common section of only five attributes above – *morality, rules of the genre, novelty, existential problem, development of culture* – is shown in Figure 10, as we consider them to be the most important features or dimensions of creative products on the level of culture. Let us illuminate them one by one.

1. As for *morality*, every culture is based on a set of moral prescriptions. Those results which cannot meet these requirements are not acceptable in the culture in question. This makes creative products entities which can vary from culture to culture. We accept cultural relativism to a certain degree limited by the general *humanism* of mankind.
2. As for the **rules of the genre**, every creative result should belong to a certain genre, such as science, art, technology and so on. We emphasize here the *professionalism* of creators. For example a scientific result has to be validated or be a well-founded hypothesis. Art also has its communicative value. All the rules can be broken at the expense of creating new ones.

3. As for the **novelties**, every creative result has to be new to a certain extent and in some respects. Nothing can be absolutely new. We have two types of novelties: essentially novel and contextually novel. It is very difficult to make a distinction between these two forms of novelty. **There is no novelty which does not have elements and/or dimensions which are old and known.**

4. As for the **existential problems**, only the questions of “to be or not to be” deserve the name creative. We can and must solve a lot of small problems and answer a lot of small questions. They – as the acts of problem-solving – are creative but not necessarily on the level of cultures and civilizations. This is the question of **significance**.

5. As for the **development of culture**, problem-solving on the level of cultures should promote the above-mentioned development. This is the question of **constructiveness**: again a very difficult feature from the point of view of its identification. Results can destroy this or that piece of culture so as to rebuild it by achieving a higher level of e.g. quality.

These features are both necessary and sufficient dimensions for calling a result creative on the level of cultures and civilizations. No additional features are necessary for this reason. We omitted the terms “valuable” and “accepted”. Why? Because all the five attributes can be expressed as values, moreover they all are values. Secondly, acceptance is a dubious concept. Some creative results were accepted almost immediately after their publication, some had to wait years and/or centuries for their acceptance. The latter were essentially and actually creative, even before the discovery of their being creative. From this point of view the delay in acceptance made human creation similar to the phenomena of natural sciences. These phenomena also exist before their discovery. This is why I cannot agree with Mihály Csikszentmihályi’s statement that creative is creative when it is accepted as creative and ceases to be creative.
when people reject its being creative and becomes again creative when people again accept it as creative and so on (Csikszentmihályi, 1998).

Below we will try to explain why the words objective and subjective should be distinguished from each other and both have their role in the studies in creativity. So let us continue our train of thought with the explanation of Figure 10. It is not by chance that I have gathered here the above-mentioned attributes of the creative product. I found them empirically a couple of decades ago and published them in my first book in Hungarian in 1976 (Magyari Beck, 1976). The factual material of this book was taken from the area which Morris Stein called big creativity. My most important finding – if I can judge it correctly – was that there is no single concept which can define creative product. Neither novelty alone nor general rules of the genre, nor morality, nor development are enough to characterize a creative product. Paradoxically the leading feature of a creative product can be that one which sounds the most conservative among the features I found, namely the preservation of that culture – via its development – for which the creator works. Our main concern should be to preserve our cultural heritage and maintain it through creative answers to the challenges coming partially from the social, political, ecological, etc. environment and partially from inside the culture. The whole development, morality, general rules of the genres and novelty are at the service of preservation. This side of the creative product we can call homeostatic creativity. We also have hetero-static creativity as well, but only as an instrumental part of the story, whereas the goal is the preservation of the bases of culture.

Of course by preservation I do not mean the simple repetition of a culture’s superficial facts, customs, etc. What we should preserve in our cultures is their spirit, their identity. Thus creative products inevitably change the cultures in order to confirm their basic values. It is easy to demonstrate that any kind of extensive development on factual level – if it is indeed a development – leads to intensive development of cultures as well. That is, in the process of practicing our creative reasoning we not only enlarge the scope of our cultures but also become more familiar with the depth of our cultures. I have to return again and again to the statement that we reject identifying the creative product with innovation. Innovations can not only be different from the creative product but can be direct enemies of creativity as well because a lot of innovations are in fact destructive. Moreover, while creativity solves our problems, innovation can
function as a kind of drug which sometimes radically separates us from our problems, and forces us to adjust to a new environment that is useless from our point of view. So let us return to creativity with its responsible view and organic nature. But if you omit just one of the five features of creative product on the level of cultures and civilizations you will lose the top concept of creative result indicated by Figure 10.
The Main Sub-themes

The problem (6)
The current status of Creatology (7)
The central phenomenon of and demand for Creatology (8)
The name Creatology: for and against (11)
How does a normal science develop? (11)
How does an abnormal science develop? (12)
Are we human beings gene machines? (15)
What kind of machines are we human beings? (15)
Creativity as human nature (17)
The Creatology triangle or pyramid (19)
The basic Creatology Matrix (20)
Detailed Creatology Matrix (22)
One of the worthless attempts in Creatology Matrix making (23)
The pre-disciplinary phase (25)
The phase of disciplines (26)
The post-disciplinary phase (27)
The practical, pragmatic phase (28)
The original form of the creativity question (30)
The “birth” of God, transcendence and social order (30)
Permeability of the border between the real and the transcendental (33)
The first elite (34)
The epistemological truth of transcendence (35)
Miracles and rules in religion (36)
Deism (37)
The conflict between Creationism and Darwinism (38)
Miracles and creativity (39)
Why could religion stimulate the development of philosophy? (41)
Philosophy and philosophers (43)
The units and levels of philosophical creation (44)
The new function of philosophy and the problem of values (46)
The “double truth” (47)
The main function of science and one example (49)
The nature of scientific Truth (50)
Disciplines and their competition for the creativity question (53)
The need for an interdisciplinary discipline of creativity (54)
The truth – or validity – of pragmatism (56)
The sources of pragmatism (57)
European intellectualism and American creativity (58)
The end of European intellectualism (60)
Romanticism as the mover of European anti-intellectualism (62)
From creativity to innovation, Joseph Schumpeter and creative techniques (63)
What are the memes? (65)
Types or sorts of memes (67)
Mutation of memes and the psychology of reasoning (67)
The third member of the blessed trinity: selection (68)
Terminology in general and in the humanities (71)
Terminology in the social sciences (72)
Terminology in the natural sciences (73)
Creatology and its terminology (74)
Advantages and disadvantages of any mixed terminology (75)
Importance of investigation into the product of creativity (77)
Bridges and cooperation between big and small creativity (78)
Improvisation versus elaboration on theory of creative product (80)
References


