ARTISTIC AND SCIENTIFIC CREATION PROCESS
MANAGEMENT

Ioan Tudor

Ioan.tudor@ugal.ro
Dunarea de Jos University of Galati, Romania

Cultural creation is not ex nihilo, but a conversion of old “material” into a new form or a re-signifying or a new combination of preexisting elements. Art, as well as science, has been characterized as acts of dominating and transforming nature. In art, the process is real and in science it is virtual. This process is characterized by an efficient management of the means of expression which must be subordinated to the message that the piece of art wants to transmit and the scientist exploits facts in order to make them significant as support, expression and exemplification of the laws of nature. There is also an ontogenesis of management: individual evolution which takes place by virtue of a program, thanks to devices with self-regulating capabilities. This aspect may be particularly interesting for cyberneticians. In contemporary civilization the transfer of certain aspects of the creation process to automated machines implies programming, algorithms. Man is an algorithmic being.

Keywords: process management, cultural, knowledge

1. Planning and ordering, basic elements of artistic and scientific creation

Art, as well as science are means of organizing a material and also the consignment of the existence of the concepts of organizing and ordering in the world. Science starts from the premise of a Universe – Cosmos (organized and even “beautiful”). Art was understood, for some time, as a way to perceive the beauty of this structure; episodic and epigone-like, as a “cosmetics” of reality, meant to beautify it through masks, make-up and ornamentation. From a deeper and more ambitious understanding, art is the creation of new universes, differently organized from the natural ones. The artist is a demiurge who understands God, criticizes him or competes with him. The scientist, who is animated only by the impulse of knowledge, only aspires to unravel the “cosmic” symmetries of reality, under the amazing, yet disconcerting and often inconsistent guise of the empirical world, in this world of appearances, often absurd or strident. The admirable logos, slumbers, as the statue, within the marble block (we make reference here to Michelangelo's famous aphorism); our observation intends to bring the scientist closer to the sculptor. But the scientist can also be close to the poet who, from the multitude of words which are offered to him, picks and orders to create meaning.

From the perspective of current science, there are two “models” of order which nature offers: the crystal (restricted ordering) and the organism (restricted organization). The mineral order is opposed, to a certain point, to the order of life. Connected to this opposition we distinguish two idle means: static balance, and dynamic balance through adjustment or regulation. We speak of two means of transformation: restructuring and evolution (development). And two types of totalities: through spontaneous apposition and through programmed (finalized) action in field of forces. Such considerations may have a real meaning for the analysis and evolutions of arts as well as the evolution of scientific ideas.

Society also introduces two specific “models” of ordering: the model of society itself (which is a system) and the machine model (the tool, the technical system). The vision of art creators, as well as the philosophers or scientists refers, implicitly or explicitly, to one or another of these four models. The technical system, especially the modern one, is materialization, in inert matter, of scientific knowledge. It is the result of a demiurge’s work. The contemporary technical system also includes an intentionally esthetic component and contributes to the everyday esthetic, along with what the “pure” arts have brought and contemporary art find in the technical universe ordering principles to which the reality that they reinterpret refers to: for example, automatisms, the mechanical composition of totalities.

The knowledge value of intuition, including artistic intuition, remains superior, so long as science has not elaborated the right means. Imposing an authoritarian form of “rationalism” is, until then, an "irrational” act. Scientists have subscribed arguments for the role of intuition or esthetic criteriology in
specialist creation. In the process of mathematic creation, the esthetic sense sifts through solutions, eliminating the wrong ones. Einstein considered that the element of poetry is always present in scientific thinking, that true science and true music require similar thinking processes.

The attitude towards the negation of the Cosmos towards chaos is also significant. The absorption of chaos into the Cosmos is the fruit of optimist vision: chaos evolves towards the Cosmos, or substantiates it due to statistic principles; the random is subjacent to the logical, it is “convertible” in necessity; a random occurrence may be an act of creation. Inversely, tragic and “devitalizing” visions of the last century are manifested in parallel in science and art through cultural phenomena, such as: the theory of the “heat death of the universe” (deduced, through extrapolation, from the second law of thermodynamics); the tragic farce; randomness, etc. The current scientific vision, tributary to the theory of information and cybernetics, gives life the significance of an “organizational countercurrent” in the energy flux dominated by the law of increasing entropy, and culture a net anti-entropic function. With the methodology of cybernetics and the theory of information, aspects of order and organization in nature, society and culture become apt for a rigorous, even quantitative treatment. A theory of order and organization may embrace the structure of the atom as well as the process of developing a personality. Information, before becoming a gnoseological act for man, was information of substance and energy, structural information. It is easy to understand that such an approach holds interest both for the biologist as well as for the esthetician.

2. The ludic character of artistic and scientific creation

Both artistic as well as scientific creation has a ludic character. Let us remember Schiller, for whom the human is best expressed through play. C. Brâncuși said somewhere that he who lost his childhood is, in fact, a dead man. Albert Einstein found that an important quality of the scientist is the persistence of the capacity to be surprised. The child finds significant sources of happiness in games and amazement.

The game is not only present in humans, but an attribute developed along with the evolution of the animal world for its multiple biological functions. As an exercise of neuromotor coordination and agility, as a “model” for later adaptive activities in the struggle for existence, the game is one of the most valuable behaviors. In humans, prolonged childhood imposed the prolonging of childhood in adults. But this biological motivation was later complicated and enriched through trans-biological, personal and social uses. A “ludic” origin of many elements of the material and spiritual culture (G. Roheim) may be admitted, without going against the explanations of cultural development linked to vital needs. The appearance of a cultural fact may have a different determinism than its presence or development. The game has garnered, in society and culture, new significances, which, probably, have not been exhausted. The man is also a creator of significances, or is a creator through being what H. Wald called Homo significans. Let us dwell on what the “game” can be for contemporary cultural creation. It is, among other things, a break from the empire of immediate utility. It is a manifestation of availability: the assumption of a waste of energy and time.

Both in art and in science, the decisive moment is not the discovery, but the confirmation. It was remarked previously that the creation process is, at the same time, a self-creating process (as any kind of work, actually). The tension with which the creation process takes place makes it so that the chances of innovation through creation increase significantly. On the other hand, creation links you emotionally much stronger than routine work. There is a type of man tied to creation (Werkgebunden — F. Baumgarten), willing of sacrifice. The paradox of creation resides in its contradictory ability to be self-creating or self-destructive. What was said referring to creation can also be extended, in smaller measure, toward the intended recipients of the work. Receiving brings you closer (as mental and emotional feeling) to creation and it also implies a creator-type contribution.

3. Science as a premise of art

A certain kind of scientific approach to reality is capable to dissipate a certain type of poetic atmosphere: we could in this way approximately resume certain time-worn discussions, which opposed a popular-romantic vision to a cynical-naturalist one. Even today we find the prejudice according to which the lucid understanding of "reality without any foreign addition" leaves no room for illusionist commentary and interpretative divagation, annulling thus an important source of esthetic emotions. It is probable that, underneath, we can find the confusion between the artistic “beautiful” and the beautiful part of reality, the idea according to which mimetic art must limit itself to the selection of elegant and pretty aspects of reality and the rest of art must try embellishing reality through veils, masks, and make-up. It is true that art brings an increase of beauty in the Universe but this is foreign to natural beauty and
constitutes nothing more than plastic surgery. Any artistic piece is worked from a material the characteristics of which must be known in order to fulfill the required purpose. Any subtle artistic activity cannot settle for an empiric understanding, it requires scientific knowledge. Literature implies knowledge of language, including grammar; sculpture implies knowledge of marble, and musical composition implies solid knowledge of harmony, counterpoint and orchestration.

“It has become obvious that nothing which relate to art, nor its interior, nor its relationship with totality is something implicitly known, including its right to exist. The losses in the sphere of what was possible from a reflexive or unproblematic standpoint are not compensated by the infinity of what has become possible and offered for reflection. This extension proves to be, in fact, from multiple aspects, a reduction. The domain of everything incomprehensible, towards which the revolutionary artistic movements of the 1910s have ventured, failed to bring the happiness promised by the adventure. Meanwhile, the process thus triggered has begun to undermine categories in the name of which it was launched. More and more elements have been caught in the roil of new taboos; rather than enjoy the newly conquered empire of freedom, artists have aspired everywhere to a pretense order, as fragile as it may be. Because absolute freedom in art, as well as any other particular field, contradicts the perennial non-freedom of the whole.”

The artistic work is reflective towards reality and as such, implies knowledge of the reality which is found in theme or décor, which supports intentional expression. Painting may be considered a prototype; Leonardo da Vinci’s anatomy studies are, from this point of view, significant in multiple ways. Just such as a good knowledge of language is a condition for the optimal use of the few tens of words that make up a sonnet, the knowledge of the richness of the concrete in multiple states is the premise for adequate representation of the fragment and state on which we are decided.

Art is precursory science, invested with new attributes and new functions. Another series of knowledge are necessary to the creator: that referring to historical and contemporary productions, from the field in which they effectively work. Medieval Christianity intended to turn philosophy as well as art servants of theology. Without this ambition, science makes use of means, procedures, artistic works, in order to progress in a gnoseological manner, but also for didactic success. With the sole difference that this help is not requested tyrannically and is fully rewarded by what science offers to art (an aspect discussed in a different part of the paper). As for the use of art for scientific purposes (which admits art different attributes) we must differentiate it from what we may call “gnoseological imperialism” in the field of art. Through this term we understand the assertion of thinkers who do not see in art anything but a certain form of knowledge, of gnoseological reflection of reality. We shall see further on that no human endeavor can be reduced to one of its dimensions; human life being first of all praxis, art is first of all creation. Of course, any creation (including technical ones), in order to be “realized”, must first reflect reality. The day to day reality is dominated by the real time transmission of knowledge by means of the computer and the internet. “The abolishment of distances and physical barriers redirects our creations in esthetic noticing and perceiving of real time. The myths of the soothsayer find their corresponding counterpart in telematics procedures, which according to Pierre Levy, open the way for a new form of “relational”, which harmonizes the individual with the collective, allowing for the emergence of a collective “intelligence” which he calls distributed intelligence.”

Science may be made attractive through artistic procedures. But art is not just a method of introducing the pleasant in the place of the barren. Sometimes art is called upon for its nature of high craft, of ordering ability, of an aptitude to integrate details into a whole. Intuitive drawings which “explain” through familiar analogies are also art; but the anatomy boards of Leonardo da Vinci are at a different level.

Art, having implications and alcoves of scientific knowledge (or terminology), circulates science. We are interested, here and now, in art as explicit science, “didactic” art in the broadest sense of the term. Not any kind of art sets out to teach man; art can be simply expression; message-art can be simply be a signal or signaling: according to J.M. Guyau, art has the intention to impress, not to teach others. Sometimes though, the intended effect, the emotional one, may be obtained by means of scientific knowledge or through a scientific vision. The artistic concerns related to the future could be taken into account more systematically since futurology became a scientific concern, tightly connected to prospective research. The approach of the modern or postmodern state of contemporary culture cannot be missing from a discussion of significant trends and mutations in the area of its main spheres, science and art, as well as one cannot ignore reflections over their possible contact points, their possible similitudes and mutual influences. If there has always been a political and educational gap between “acquired knowledge”

---

70 Theodor W. Adorno, Teoria estetica, Editura Paralela 45, Pitești, 2005, pag.5
71 Fred Forest, Pour un art actuel, L’Hartmann, Paris, 1998, pag. 54
and “created knowledge”, this has probably never been as obvious as in the era we live in, that of the computer and of television. Stricken by fear when confronted with a world which changes outside of his control, man has a tendency to seek refuge in the past. The artist refuses this retreat, he acknowledges the present, he tries to explore it. "Art is an attitude, a way of positioning oneself as related to a myriad of things, rather than a thing in and of itself".72

The esthetic and artistic criteria could be taken into account in analyzing a situation, a project. These projects would require that both the qualities of an artist as well as artistic vision (with the sense of synthetic, integrating, totaling vision) enjoy great appreciation. The last centuries have not only seen just the confirmation of the prestige of science but also the progressive growth of the prestige of art. The goal is perfection, apex, perennial, organicity, originality. Not few were those who perspired in order to give their scientific endeavors some of the admirable brilliance of a genius work of art.

Exertion can be truly dramatic. Exigency towards your own research can lead to self-aggression and discouragement. Inhibition may extend to collaborators. Especially in inductive sciences, where the fragility of conclusions is tied to the fatal lack of completeness of the observational and experimental material, art, taken as a model, in the sense described above, interferes with the dynamism necessary for research which progress, usually, through increasingly accurate approximations, through suggestions and controversies with a heuristic role.

We understand art as an extremely serious and exigent pursuit, and not as entertainment, under the free whim of the imagination which skirts the surface of things. Incorrectly, such a fun wandering of the mind is called "inspiration", and the verbal statement, insufficiently reasoned, is labeled as "poetry". In actuality, inspiration is a torrential, unsettling and dangerous communication between the unconscious and the conscious and art is genesis, birth.

E. Sperantia, who considered that axiotropism is a human characteristic, showed that the main "psychological spring of human evolution" is the desire to possess values and the desire to become value. Today’s complex society allows both in science and in art, for the existence of countless aspects and means which satisfy this desire, by “values” we could understand a large registry, including even material-pecuniary values and ending with the martyrdom halo. But not only social framing and axiotropism deserve pause. Science and art are “consumer goods”, in their quality as “gratifying information”. Science can be captivating and emotional; art can be interesting and ponderous, etc. Still, the realities of contemporary civilization, dominated by profound mutations both with regards to the scientific field as well as the artistic one creates difficulties of adaptability and comprehension both by the public as well as the creators of art or science themselves. "The crisis of art, escalated to the possibility of its elimination, affects in the same measure its two poles: sense and through this its spiritual content, as well as expression, and with it the mimetic moment. One depends on another: no expression without sense, without the medium of spiritualization, no sense without the mimetic moment, without the linguistic character of art, which today may disappear"73

Science, as well as art, may be entertainment but also diversion; they may be opportunities for dynamism and outlining the stagnant or flat personality, as well as opportunities of quasi-therapeutic balancing. Both have a formative and trans-formative role. They can be roads to reality “as it is” or, on the contrary, an escape from reality. The parallel (or entwined) nourishment of art and science, other times very frequent, has become more and more more difficult with the development of art and science.

Specialization and full focus on a single line of intellectual energy, more and more imperiously required by modern society, are opposed to superficial dilettantism, other times sufficient for obtaining valuable results in any sector. Thus, the current mentality, which suspects of flippancy the cultural type with a multilateral activity, has a statistical base: life experience shows that he who hugs a lot cannot bring a satisfactory harvest. To this establishment we may oppose a different historical one: the history of culture shows us that almost all great creative personalities have been multilateral. The counterargument is based on: a) the fact that never, in the course of history, man has been confronted with such an informational flux as ample as today, and that long ago the technique of consistent accomplishments was much simpler; b) on the idea that those great personalities were multilateral because they were brilliant (and we cannot attribute to their multilateral trait, as a life and work methodology, the amplitude and value of their accomplishments).

Scientists have also recognized the role of cultivating art in the formation of their concepts of world and life. If scientific fantasy is educated through artistic fantasy (and vice-versa, especially in science-fiction literature), scientific intuition is developed, preferably, by means of esthetic education.

The truth may be somewhere in the middle, but, by no means must it lead to the eulogizing of mediocrity and ultra-specialization of sensibility and goal. Furthermore it must keep in mind the typological diversity of individuals; which, for a certain type, may be a condition for progress, while to another an inhibiting factor for development. The history of universal culture notes in the literature chapter the great poetic work of Omar Khayyam; in the mathematics chapter, his great scientific work. Both the science and art of our century are marked by revolutionary moments, significant manifestos in their tendency towards universality, a tendency expressed by necessity in abstractization and essentialization. The role of abstraction in modern sciences is unanimously recognized, an expression of which constitutes their increasing level of mathematics, as obvious in certain parts of art, an increasing process of content sublimation in favor of abstract shapes. Noticing the tendency towards essentialization of modern art, especially new sculpture, Lucian Blaga considered it also a trait characteristic to our era: "Its correspondent in science is the hunt for ultimate principles, in philosophy the thirst for synthesis. The lean towards “essential” corresponds to a metaphorical appetite.”74

Appetite which, Blaga considers, has not invaded to the extent it has today art and science. If, in the view of classic philosophy principles science was considered exclusively a means of theoretical knowledge, being placed in the perspective of a speculative and contemplative ideal, today the link between scientific knowledge and the ability to act efficiently on the world is recognized. The lucid observer of the artistic and cultural phenomenon within the new technical civilization opine that the sociological phenomenon of transforming receptors into a mass public, as relates to its extension and the access to planetary information is accompanied by a negative effect which relates to the modification of the very ontological and esthetic status of a work of art or cultural product and, as follows, the heralding of a new type of contract of the subject with the results of this modification. Taking into account what Etienne Gilson, for example, calls the transformation of the work of art into an artistic object or "thing". If it is true, he observes, that the productions of man are works rather than things, those of machines become things. They are produced by machine rather than nature, but are things, cultural objects rather than works of art. "Mechanical procedures of multiplication, reproduction and distribution of industrial imitations of works, have thus as an effect the substitution of works of art made by man with works of art or “cultural objects” made by machines the ontological status of which is to analogous to that of natural things. Depending of art at its origin, which is the artist, the art object differs specifically from art due to its efficient cause, which is the machine, and by its purpose, which is money.”75

The communication of our contemporary word is characterized by the imperatives of the time. Technological evolution determines the importance of the means of communication and brings new sides to the role of communication. In this context, communication through image has an increasing importance as relates to communicating by other means. The fundamental event of the modern era is the conquest of the world as an image. Visual images are studied by different disciplines, from different perspectives, with different methods and ends. The importance of communication through image has never been more acute than nowadays. The contemporary world is under the influence of a technique with accelerating effects on the rhythm and directions of development of contemporary culture and civilization. These changes require modifications particularly related to the human being’s adaptability. The context of perception experiences in which the modern man is placed implies, first of all a modification of mental attitude meant to facilitate the comprehension of new phenomena or those yet to appear. Art for example, cannot but take into account the effects which the particularities of our era impart, the atmosphere created within culture and the emergence of new factors (technical and scientific discoveries, scientific and philosophical syntheses, scientific and political ideologies, etc.) and, within their frameworks, of the evolution of conception itself, of the idea that man develops of the space and environment which he builds for himself. The act of artistic creation is granted, in this framework, a new ontology, new directions, and other values in esthetic, ethical and ideological order, determining a new rapport between constructive interior virtualizations of art and the ensemble of external structures and phenomena. The image became the strong currency of globalization. Human communication in its varied forms and sign systems has allowed for the addition of cultural values along the history of mankind, by conserving and transmitting them from one generation to the next, a process which confers onto culture its cumulative character.

74 Lucian Blaga, Scritti despre artă, București, Editura Minerva, 1970, pag. 72
75 Etienne Gilson, La societe de masse et sa culture, Librairie Philosphyque , Vrin, 1967, pag. 18.
The contemporary scientific and technical revolution leads to the increasingly accentuated development and diversification of artificial languages, as a necessity for the progress of science. The inclusion of language into a philosophy of concept is justified for at least three reasons: language becomes condition, model and object of science. Language installs culture and this quality becomes a condition of science, pulling thinking from the immediate sensible given. Even though technological art is the most representative art form of our electronics dominated era, its profound implications are to be found in the future. Artists, in their works, have in common, as an endeavor, the exploitation of a vast specter of esthetic categories through different advanced technologies.

At the same time, what separates them from the previous generation of artists, who also worked with technological factors (in some cases, personal research), is their concern for the spread of social and cultural changes produced by the latest technological developments. In 1980 and the beginning of the 90s these artists tried to promote a significant relationship based on human experience – physical, psychological and mental – and the radical, global emergence of new technologies in all spheres of reality, with all of their beneficial effects, unforeseeable potential and immense possibilities that they offer. Image as an interface represent our rapport with the seen and unseen reality of things. We are seers and feelers of the images of the real/virtual world through which we pass. Fixed and moving images, paintings with a soul, mold representations of the real in a never-ending search for knowledge. More than ever human beings need images to communicate with one another and for a more comprehensive understanding of things.

Artists create images and have always worked with the virtual. The artistic object, as a product of the imagination of the artists or as a faithful reproduction of what exists, considering the extraction of the fragment of reality from the living, multi-dimensional world and its reproduction, or better put, its transcoding into the bi-dimensional and tridimensional contains a process of virtualization. In each era we find different ways of including the virtual in the artistic object, in an action or artistic event (maps, temples of the sun, trompe l’œil, catoptric chests, shamanistic and, why not, religious rituals – fetishism, magic, illusionism, simulation). In the second half of the 20th century the material objectification of artistic work given by the concreteness of a fixed, traditional base (canvas – painting, paper – graphics, wood, stone, metal – sculpture, decorative arts, etc.) is virtualized and passes into the ephemeral with the use of electronic technologies which at the same time multiply artistic mediums. New art forms are developed: neon, laser, holography, video, computer art, communication art.

The image goes through transformations related to the way in which it is visualized and inscribed on an electronic base. Dematerialized, the image, in the case of video framing, may be modeled, textured as a whole or in parts according to the wishes of the author and with the aid of the computer, becomes digital video image. Digital video image represents a major component, active in the digital era. The digital video image bestows new dimension on the concept of image in visual arts, in stage arts, in the fields of social existence. The immobility of the classic art object disappears in the process of transforming image and through interactivity, a fundamental concept of digital art. There is an author, the multiple authors and users which intervene in the process of creation which we call co-authors. Technological performance amplifies the speed of electronic transition, of transferring the image at a distance. We travel as cyborgs in the universal space, accompanied by images within images. We discover, know, invent and build worlds. Space and time in digital video image is fragmented, multiplied and recomposed in the intention of the author to render the multitude of layers of material and immaterial existent and non-existent realities. The numerous means of manipulating digital video image offers choice as a procedure. The result is diverse final images, possible combinations of the same material, in the work process the random, unpredictable intervenes. A single, author/user, with the help of software programs and high performance computer equipment can obtain complex images, numerically constructed in the virtual reality of the computer, non-existent in human reality. Interdisciplinary teams, in a concerted effort, create interactive electronic pieces of digital ambient and virtual reality. This independence garnered by the author, user of boing producer and online distributor of his own electronic product is important. Within this technological, scientific, artistic process, there is a ludic component. The game of chance, of unpredictability, of choice interferes in the multitude of operations which have as a result the digital object.

4. Conclusions

We are passing through an era dominated by image. An abundance of information and images overwhelm. Within this context, the individual and collective struggle to keep the identity of local imagery is intensified. The assault of globalization, with certain positive sides of improving human life, must be maneuvered so as the local and individual visual identities not be uniformed into a monotone, planetary
standardized grey. Man has always attempted to illustrate the unseen part of things, the unknown. Through digital image we capitalize on the heuristic potential of visual embodiment of the nonexistent that we thus bring into the reality of image. We give it life and inhabit it as cyborgs, the inhabitants of cyberspace.

Digital video image represents a vast land to explore, of electronic image, capable to act as a catalyst for the appearance of new forms of art, new forms of perception and also diversifies the rapport between artistic object, author, public and audience. The artistic event is moved online and may take place in the virtual space. An unseen, present audience molds through direct involvement, possible due to communication technologies, the electronic work of art. Electronic art, fascinating, but not for everyone. An art with values and non-values given by the consumerist civilization in which we exist and yet a magical art capable of deep meaning and sublime. Referring to the media phenomenon that is based more and more on visual image, opening access to “the world”, we observe that it transforms reality in a discursive phenomenon, scripted. Radically transforming the emission, transmission and reception of multimedia messages, it makes us aware on different levels and in different degrees of comprehension of the reality in which we live. In this context, art and science are characterized by an ample process of organization and planning of specific activities, which would also encompass information and the accumulations of the past entwined with the latest discoveries and innovations without which creation could not take place.

References
1. Theodor W. Adorno, Teoria estetică, Editura Paralela 45, Pitești, 2005
4. Lucian Blaga, Scrieri despre artă, București, Editura Minerva, 1970
5. Etienne Gilson, La societe de masse e sa culture, Librairie Philosophique, Vrin, 1967