

The Definition of Life: An Essay in an Interdisciplinary Dialogue between Biology and Religion

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Abstract

1. Life, and particularly human life, lies in the intersection of three disciplines: the sciences, above all biology, - philosophy, above all philosophy of nature and anthropology - and, at least, theology, too. Every discipline has a special concept of life in the frame of its method and its concepts. To mention only the extremes: For a biologist life has developed in the process of evolution and is, above all, defined by the genes and metabolism; nearly for all of the great religions God himself is pure life. How can this gulf be bridged? Among all beings, we know, only man participates in nature as well as in culture and is, beyond this, open to transcendence. In his own life all aspects have to be taken into consideration. Therefore it is impossible to accept an isolated side by side of the different definitions of life. It must be shown that they belong together. But which argument and which phenomenon can us lead from a biological to a cultural and even a religious definition of life? Though I will concentrate above all on human life, this topic concerns the whole nature and the relation of man to it.

2. I will start with the scientific definition of life, because it is dominant in western culture. Life has a history: It has developed in the process of evolution. For most biologists the first living being is the single cell. With the biological basis, the genetic code, consciousness, too, has, as Darwin has argued, developed. All living beings are described as 'open systems', "which are composed of parts, which have the function to guarantee the survival and the reproduction of the whole."(Smith and Szathmáry: Evolution) But what are the implications of the concept of 'system' in its application to living beings? And in how far have living beings to be characterized as a 'whole'? These questions lead us further to a brief reflection on the scientific method.

3. One of the main characteristics of the method of science, as it has been developed above all for physics, is the exclusion of all those experiences, which refer to the observer in his subjectivity: Qualified sensations, aims and values are ignored as well as to the biographical identity of a person. From scientific facts, so a wellknown statement, values cannot be deduced. But if consciousness belongs to life, can we get a full definition of it, if we objectify it completely? Is it really sufficient to define life, as H.Maturana does, as 'open system' and man as a 'selfreferential system'?

4. Already the single cell, so tells us biology, shows a certain irritability, a sensitivity for perceptions. At least for the big apes and especially for man intentions, aims and values cannot be neglected. Without doubt man is by his body a part of nature, but he is a cultural being, too. For Homo sapiens, palaeanthropology shows us, the symbolic interpretation of the world is characteristic: Religious rites as well as paintings in caves are a sign for the symbolic form of intelligence. These symbols cannot be reduced to biological processes, though they are based on them. The interaction of biological and cultural processes are constitutive for human life.

5. Man has a consciousness of himself and an imagination of time. Therefore he can ask for the beginning and the end of his own life. Death has not only a biological, but above all an existential meaning. It can change the values and aims of his life. Beyond this the question may rise, if there is a sort of eternal being. Man is by his constitution open to transcendence. Now, as the last step of my argumentation, the religious definition of life, too, can be taken into consideration. Life therefore cannot be restricted to preservation. Self-transcendence is the main characteristic of man as a cultural as well as a religious being.

7. Summary: Human life is based on the interaction of physical, cultural and even religious forms of life. He is by his body a part of nature, he creates culture by the symbolic form of his intelligence and he is open to a transcendent sphere. Man himself is the point of convergence of the different orders of being. In a paradigmatic manner the definition of life shows, that the separation of humanities, religion and science is based on a historic decision in the 15th century, which has to be overcome to-day. The completion of the different perspectives is absolutely necessary to be able to understand life, and above all human life, in its different relations to itself as well as to others and to the world.

Biography

Dr. Regine Kather was born in 1955 in Germany. She has studied physics, philosophy and sciences of religion in Freiburg i.Br., Basel and Paris. In 1985 Kather started to teach philosophy. 1989 she earned her Ph.D. and 1997 a Habilitation in philosophy at the University of Freiburg; since then she has taught there regularly. Because of the Venia legendi she is obliged to teach there as Privatdozentin. From 1998-2002 she taught for several weeks each semester at the Universities of Bucharest and Cluj-Napoca (Romania), since 2000 as Associate Professor. Kather is a member in the organisation committee of an interdisciplinary forum at the Catholic Academy of Rottenburg-Stuttgart. Kather has written several books and essays about the dialogue of science, philosophy and religion: "Zeit und Ewigkeit. Die Vieldimensionalität menschlichen Erlebens" (1992); "Der Mensch - Kind der Natur oder des Geistes?" (1994); "Ordnungen der Wirklichkeit. Die Kritik der philosophischen Kosmologie am mechanistischen Paradigma" (1998); "Gotteshauch oder künstliche Seele? Der Geist im Visier verschiedener Disziplinen" (2000); "Was ist Leben?" (2003); in preparation: "Wer ist eine Person?".

1. As topic for this lecture I have chosen the definition of life, because life, and particularly human life, lies in the intersection of three disciplines: the sciences, above all biology, - philosophy, above all philosophy of nature and anthropology - and, at least, theology, too. To-day the definition of life is of great theoretical, and by modern technology, of great practical importance, too. It does not concern only man, but the whole nature. Nevertheless I will concentrate on human life and on the theoretical, not the ethical problems.¹

In the philosophical tradition the concept of life has been discussed as a part of the philosophy of nature and of anthropology. Both perspectives complete one another: On the one hand man is not only determined by pure reason and by culture; as a living being he participates in nature, too: biologically by his metabolism, aesthetically by qualified perceptions and, at least, in ethical respect by aims and values which influence his way of acting. Science itself can deal only with the metabolism, but it cannot thematize qualified perceptions and ethical values. By its method it excludes all data which refer immediately to man in his subjectivity, though they are important for his relation to himself and to nature. In consequence the physical world cannot be reduced to that part of nature, which can be explained by the method of science, by physics, chemistry and biology only. In difference to science a philosophy of nature can take into consideration qualified sensations as well as aims and values. Therefore the philosophical anthropology has to discuss the insights of science as well as those of a philosophy of nature.

On the other hand science has, especially if it deals with man as its object, to reflect on its own conditions of recognition. It is above all based on the capacity of man to develop symbols for the interpretation of the world. Man is, as *Ernst Cassirer* puts it, an 'animal symbolicum'. And man can reflect on himself. He knows, that his life is finite and he may ask for an eternal form of life.

Man himself is a point of convergence of the different aspects of life. They belong together, because they apply to the same range of being. The coherence, the unity of the different aspects of human experience is an important condition for the development of personal identity. Therefore the different interpretations of life cannot be separated completely. They have to be related with one another by its 'object', by human life itself.

I will now start with the scientific definition of life which is without any doubt dominant in western culture. Then I will show the main aspects of the method of science. In a third step I will show the limits of a definition of life, based only on science and transcend them by philosophical and theological reflections.

2. The definition of living beings as 'open systems':

2.1. The relation of part and whole:

"Living beings", so the definition of two biologists, Smith and Szathmáry, in their book 'Evolution', "are very complex systems, which are composed of parts, which have the function to guarantee the survival and the reproduction of the whole."² But what are the implications of the concept of 'system' in its application to living beings? And in how far have living beings to be characterized as a 'whole'?

The question concerning the relation of part and whole is one of those subjects which have been discussed again and again in the history of modern philosophy. It leads us to an important methodological problem: On the one hand *Bacon* and *Descartes* have argued, that the characteristics of the whole organism can be explained by those of the parts. Living beings, so the thesis, therefore can be analyzed completely by physics; all their functions can be described by the laws of classical mechanics, which are formalized by mathematics. On the other hand *Kant*, *Schelling* and *Goethe* replied, that an organism cannot be divided into parts; it has to be regarded as a whole. Biology, Kant showed in the 'Kritik der teleologischen Urteilskraft' for the first time, cannot be reduced to physics.

At the beginning of the 20th century Driesch, now based on empirical data, demonstrated, that an organism must be conceived as a whole. Though his theory, the so called Vitalism, is no longer accepted, it was nevertheless an important step for the further discussion. It was Ludwig of Bertalanffy, the founder of the theory of systems, who finally developed a synthesis of the mechanical and analytical explanation of organisms and holistic conceptions. To explain the function of a single organ, so the thesis, the analysis of causal effects is not sufficient; it is absolutely necessary to know the special function of the organ for the whole organism, too. "We can", so the argument of *Bertalanffy*, "describe every single process in an organism by physics and chemistry; but under this respect it is not yet characterized as typical for a living process. At least most of these processes aim at the preservation, the reproduction and

the restitution of the organism as a whole.”³ Every part has a specific function for the whole; and only by means of the whole the functioning of the parts can be explained. Neither the whole can be combined by the simple addition of isolated parts; nor does the whole steer the parts by an external influence. As a system a living being is a whole, whose complexity does not depend of the quantity of its elements, its atoms, molecules, cells and their causal interaction, but of their structural and functional integration. A system is an inseparable unity in the multitude of its different functions.

2.2.The relation between two forms of causality

To explain the interaction between the parts and the whole two forms of causality are necessary: efficient and final causes. The efficient cause has no aim, but produces one effect after the other in a linear succession. The final causes determine the special function of the part for the whole. The heart for example has the function to pump the blood in the body; only then it can survive as a whole. No function can be explained without efficient causes; but there are certain processes which must be explained by final causes. In difference to physical theories, in biology final causes have to be taken into consideration. This is one reason, why biology cannot be reduced to physics. Organs are in a literal sense instruments, which serve to fulfill a certain aim. Nevertheless the aim is as a demand already present in every moment of the process. Only by the anticipation of the aim in every singular step the organism gains its unity. Without this form of interaction the unity of a living system would be impossible. So called bottom-up and downward causation belong together.

The interaction of the parts should, so the cited passage of *Smith* and *Szathmáry*, ‘guarantee the survival and the reproduction of the whole.’ Not self-transcendence, but, as Darwin first has taught, self-preservation and self-reproduction is the final aim of every living being. For self-preservation an organism has to return again and again into the same state.⁴ The succession of phases has to remain the same; only the speed of the process may vary. To prove this thesis, observe the functioning of your own heart. The biological form of life, in nature as well as in our own body, is reigned by cyclic processes. Self-preservation is the basis for cultural and religious forms of life, which have to be characterized by self-transcendence.

The explanation of the whole organism by final causes does not imply a teleology of the whole nature, as *Aristoteles* has thought. Already several hundreds years before *Darwin*, *Spinoza* had denied a teleology in nature. Beyond this, the concept of final causes does not imply a conscious decision for certain aims, as *Kant* has thought. And at least it must not yet be understood as the behavior of living beings caused by feelings, emotions and interests.

2.3. The inner dynamic of a system and its relation to the environment

The self-preservation of a living being is possible only by its metabolism. Certain substances are taken from the environment, transformed and then integrated into the body of the organism; waste-products are given back to the environment. Though, or better, just because matter is permanently exchanged, the system can preserve its form. In difference to a machine, which does not integrate the energy, which it needs for running, an organism is a product of its own activity. As already *Aristoteles* has argued, life is a process initiated by itself. As soon as this process ends, an organism dies. Life is possible only far from the thermodynamic equilibrium. Therefore all living systems, though not all physical systems, are *open systems*.

For most biologists the cell is the basic unity of life. For the first time a membrane separates an inner space from the environment. But the cell is not locked in itself; it is already an open system. On the one hand, it has a border, and, on the other hand, it permanently exchanges matter, energy and even information with its environment. Though separated from it by the membrane, it is an integral part of it. For self-preservation it has to keep a balance between the interior processes and the environment. Nevertheless the cell has a certain autonomy, in the literal sense of the word, which cannot only be explained by its adaptation to a specific environment; it is based on the interaction of its different components, too. The process of selfregulation is steered - as the language tells us, too - by a feed-back between the whole and its components.⁵ By the feed-back of causes and effects, whole and parts an organism can keep its inner balance even if the external conditions may change. The environment cannot determine the development of the system, it can only assist or hinder it. Organisms, *Kant* and *Schelling* therefore have argued, are 'at the same time the cause and the effect of themselves, they are organizing themselves.'

Nevertheless the relation to a special environment is constitutive for self-preservation. The identity of a system is defined by the relation to otherness, as *Plato* has argued in the ‘Sophistes’. The environment of a living being is not only constituted by anorganic matter, but by a multitude of other living beings, too. For the self-preservation of one species the living cycles of all other beings have to be adapted with one another. Every organism is an integral part in a greater system, in that of the population, the ecosystem, the biosphere, and yet even of the universe.

For this hierarchical integration of different systems the interaction of the parts and the whole is constitutive, too. Every living being depends on the biosphere, - the biosphere itself is constituted by the interaction of the different organisms.⁶ The feedback between the single living being and the greater system implies a mutual transformation, if one of the parts varies. On the one hand the transformation in the conditions of life enforces a new adaptation of all living beings to one another and may lead by mutation and selection to the variation of a species; on the other hand the genesis of new species changes the processes in the biosphere as a whole. By this feedback the composition of the biosphere has changed irreversibly during the long history of our planet. The genesis of plants for example has altered the atmosphere fundamentally and by this the conditions for future forms of life, too. Insofar evolution is based on singular processes, which neither can be predicted nor reproduced exactly, it has a historical dimension. This is a further reason, why biology cannot be reduced to the method of physics.

2.4. Ethical implications

The rediscovery of the dynamic of nature during the last century has serious consequences for ethics: On the one hand man himself is by his body and by his actions an integral part of the biosphere. Even without taking technical inventions into consideration, he causes small effects by his metabolism, by producing and eating food and by delivering waste-products and energy to the environment. Though by technical inventions his independence of nature is much greater than that of all other living beings, the environment still prescribes certain conditions for his life. An ethical theory, which is based on the agreement of men, attained by rational arguments only, must be as inadequate as a pure cultural relativism. The minimum man needs to subsist is not based on personal or cultural habits, but on his physical

constitution, which depends only to a certain degree of his manner of life. The temperature on this planet cannot be much higher or lower; a certain amount of oxygen is necessary; radiation causes severe illness or even death; and a minimum of food and water is necessary for survival. If one takes the will to survive as a basic criterium for a global concept of ethic, interventions into nature, caused by man, must not disturb the order of the biosphere seriously. To regard nature as an open system and man as a unity of body and mind forbids us to-day to conceive of nature as an independent object of our cognition and interests, as *Descartes*, *Bacon*, *Kant* and most scientists have done. Not only timeless laws, but the dynamic interaction of a multitude of components, which include man himself, determines the conditions of life. The dynamic of nature therefore has to be taken into account; it may correct human theories as well as his interests and activities.

3. Objectivation as the method of sciences

3.1. The 'View from nowhere'

In describing living beings as open systems a serious epistemological problem rises: Both, anorganic systems and living beings are analyzed by analogous models. A heating plant, the management of a firm, and a living being are seen as an organized whole which is based on feed-back. Man, too, as *Maturana* argues, can be described as a 'selfreferential system'; for the explanation of his behavior qualified perceptions, aims, values, intentions and meanings can completely be ignored. Even the ideas of freedom and responsibility are not taken into account. To understand this conclusion, we have to consider the epistemological assumptions of the theory of systems: It is based on the method of science, which first has been developed for physics. By its application to living systems therefore the question must be answered, in how far it is really adequate.

The aim of the method of science, as it first has been developed in the essay of *Cusanus* on 'the Layman and the Experiments with the Weigh', is to recognize the laws of nature and to describe them by mathematical formalism. To achieve results which are independent from the subjectivity of the observer, systematical experiments have to be constructed. To raise the precision of the data, an experiment has to be repeated very often under the same conditions. They have to be reproduced artificially, though in real nature, as biology tells us, it is impossible, that exactly the

same conditions will occur once more. Only then the observation can be reproduced by every man at any time and place.

The observations, made by an experiment, are not only a prolongation of our daily observations, but a transformation. All qualities are transformed into measurable quantities. Methodologically all experiences are excluded, which refer to consciousness in its subjectivity and individuality, and that means all qualified sense-perceptions, meanings, aims and values. Even the act of cognition itself and its intention is excluded from the data, which are the basis of a scientific theory. The world is not regarded under the perspective of the first or second, but only under the perspective of the third person. Everything, stones as well as animals, the human body and the consciousness of man, are regarded as a thing among things; they are objectified. Even the scientific explanations themselves, as *Maturana* argues, seem to “happen in the process of understanding in the observer; these events are experiences, in which the observer regards himself as from outside.”⁷ Therefore in the frame of the scientific method does not exist an individual perspective or a certain form of intentionality; it is, as the American philosopher of science, *Thomas Nagel* has said, ‘a view from nowhere.’

Because of their method scientific theories are based on empirical data, gained by systematical experiments, and their interpretation. Though the data are the basis of the theory, it cannot be deduced immediately from them; it is developed by construction. The gathering of data itself is already led by a certain question, by a frame of concepts and by a certain method. The data, which have to falsify the thesis, never can be taken as pure ‘facts’, as an image of reality; they are always intermingled with interpretations. What can be observed, depends therefore, at least to a certain degree, of theoretical assumptions and that means, of a coherent system of concepts.

Nevertheless the theory cannot be reduced to pure mental construction and intersubjective agreement. The theory has to fit to the data and to be applied pragmatically, in experiments and technical interventions, and that means in concrete actions. Only because scientific theories have a pragmatic aspect, theory and empirical data can correct one another. By this sort of ‘dialogue with reality’ new observations can enforce the construction of a new system of concepts. And if the conditions of the possibility of cognition change fundamentally, as has happened by

the theory of relativity and quantummechanics, the concepts of experience and reality change, too, as *Kant* has argued.

Scientific theories are not based on singular data, but on a coherent system of concepts. Coherence means consistence, the exclusion of contradiction and the systematical combination of the different concepts as well as the correspondence of the concepts with the empirical data.⁸ Therefore the definition of truth is valid only in the frame of a certain system of concepts. Another range of objects may enforce another system of concepts. And in respect to the same range of objects another system of concepts may reveal other observations. If one accepts the limits of validity of a theory, the question, whether a coherent theory is right or wrong, is not correct. It may be valid for a certain range of objects and for a certain question. Therefore we need more than one method to recognize the complexity of the world.

3.2. The perspective of the first person and the condition of the possibility of objectivation

One of the limits of the scientific method, which is important especially for our problem, the definition of life, is the exclusion of all experiences which refer immediately to the observer as a living and thinking being.

This limit is already obvious in theories, dealing with anorganic matter only. Though to-day a lot of experiments can be made by computers and machines, neither the conception of instruments nor the interpretation of the data can be done by them. The observer himself cannot be replaced. Qualified perceptions as well as the specific intention of the question and the aims for the construction of experiments belong to the conditions of the possibility of scientific cognition. Qualified sensations, intentions and aims, which allow the empirical and objectifying analysis of reality, increase our knowledge, though they cannot be explained by the scientific method itself. Therefore we need a form of knowledge, which can be gained by the perspective of the first person only.

The deficiency of a form of knowledge, based on objectivation only, is evident in a further respect: It is a wellknown statement that from scientific facts ethical judgements cannot be deduced. Nevertheless the knowledge, what we should do, is necessary for our daily orientation as well as for the handling of the scientific results.

Without any doubt, the method of science can explain certain aspects of reality; but it cannot develop a view of reality, which includes man as a living and thinking being. Because consciousness in its subjectivity and with its intentionality cannot be described adequately by the perspective of the third person, the perspective of the first person now has to be taken into account. The scientific and the technical form of knowledge have to be completed by another form of knowledge, which cannot be formalized mathematically and proved by systematical experiment.

4. The limits of objectivation: Affection, irritability, capacity for the perception of signals as characteristics of living beings

The limits of the method of objectivation are evident not only in respect to the conditions of the possibility of human cognition, but for the whole range of living beings: At this step of my argumentation we should keep in mind that man himself is a product of the process of evolution. As Darwin has pointed out, the human form of consciousness has developed from the most simple forms the first living organisms have had. All living beings, man included, are therefore not only related with one another by the genetic code, but by their inner life, too. The special form of human consciousness is at least not completely different from that of other living beings. Therefore qualified perceptions have to be taken into consideration of all living beings.

Very often only three characteristics of life are mentioned explicitly: Metabolism, reproduction and the mutation of the genes. All of them can be objectified in the scientific sense. Nevertheless most biologists add another characteristic, which is decisive for the difference to anorganic systems: Biologists themselves speak of irritability, of the capacity to perceive signals and to answer to them by a certain form of behavior, which cannot be explained by physical or chemical forces. It does not make any sense to say, that a crystal grows because of irritability. Irritability first can arise, if a being has a membrane by which it is separated from the environment. The difference between the interior and the exterior world is necessary. Therefore already the single cell has a sensitivity for signals, by which it can steer its movement in space and adapt itself to new conditions (for example: Amöbe, *Guardia*). This capacity is a condition for survival and that means for the process of evolution, too.

Together with the growing biological complexity the capacity to perceive qualified sensations and finally pain and pleasure, desires and aims, has developed. One of the most important characteristics of evolution is that of consciousness. The definition of life therefore would be incomplete without the discussion of the special function of qualified perceptions as well as the different forms of psychic life. Living beings never can be described only by the standpoint of an external observer; they always have, at least to a certain degree, a feeling for themselves, too, a 'Für-Sich-und-Inne-Sein'⁹, as *Scheler* says. They are not only objects for observation, as lifeless things, but at the same time living centers for the opening to the world. Therefore we need, at least in an analogous sense of the word, the perspective of the first person already for non-human beings.

To extend this methodological assumption far beyond the human sphere does not mean, that we should know exactly, what other living beings feel. On the contrary: Necessary is only the assumption, founded in the theory of evolution as well as in phenomenological observations, that they, too, have qualified perceptions. Even if it would be possible to analyse the physiological processes in the neurons of the brain which are the reaction to a certain stimulus, the scientist will never be able to feel the special quality of a color, a smell, or a scent or to grasp the meaning which this feeling has for the living being itself. The physical and chemical processes do neither explain the quality of the sensation nor the capacity to perceive it.

Even the thesis of scientific reductionism, that the rise of subjective perceptions can be compared with the emergence of a new physical quality, misses the characteristics of qualified perceptions and meanings. Though an anorganic system may gain a new attribute, it can be described within the same categories. But the categories, needed for the description of qualified perceptions are fundamentally different from those, needed for the description of the correlated physiological processes. This epistemological asymmetry between the process of perception and the perceived process, between subject and object, first and third person, has explicitly to be taken into account for the definition of life.

Beyond this the epistemological assumptions have not only to be corrected in respect to the object of recognition, but in respect to the observer as well. The subject of observation can take into account the perspective of the first person only, because

he himself knows already, what it means to have qualified perceptions and how they influence his behavior by their meaning.

How important qualified perception are for survival and therefore for the process of evolution, can be demonstrated by persons, who do not have the capacity to feel pain. They normally will die early, because they do not know, what to avoid, when to take a medicine, or that they have to drink enough water. So, as *Whitehead* has argued, scientific theories have to be completed by data, based on the phenomenological method. Only then it will be possible to thematize those aspects of life, which cannot be objectified, but which are nevertheless essential for its definition: intentions as well as aims, the ethical, aesthetical and religious dimensions of life.

5. *The definition of man as 'animal symbolicum'*

5.1. *The sphere of culture as 'environment' of man*

These arguments will now be developed for the definition of man. They show the limits of the definition of man as a selfreferential system in the sense of *Maturana*. To an open system belongs, as we have seen, a certain autonomy as well as the relation to a special environment. But what are the characteristics of the genuine human form of 'environment'? Without any doubt man is by his body a part of nature. But there is another condition for the possibility of human life: It is the sphere of culture.

If we regard the genesis of *Homo sapiens*, we will see an interesting convergence between palaeanthropological and philosophical reflections: Since *Homo sapiens* came to Europe before about 50 000 years, a new dynamic in the invention and production of artificial objects can be observed. It is evident, that man did not only take care for his biological survival, for food, sexuality, and protection; he did not only feel his needs and what was happening around him; he invented symbols for the representation and interpretation of what he perceived, felt und thought. He began to paint pictures in caves, he produced sculptures, and ornaments, he developed religious rites for burying the dead, and he invented tools, which were much more complex than those known before. In a rather short time a complex of new capacities has arisen, which changed the relation of man to the world and to himself fundamentally.

The condition for all these activities is the capacity to use physical objects, a certain colour, sound or stone, as representative of a meaning. “Our form of creativity”, so the argument of the palaeanthropologist *Ian Tattersall*, “is based on our capacity to create mental symbols. Only by the combination of symbolic contents questions as: ‘What is, if...?’ are possible.”¹⁰ Only a being, which is able to analyse and to connect the events, which are observed, by spacial, temporal, causal and substantial categories, is able to ask this simple question and to try to find an answer. Man is not only living in a certain environment, but he interprets what is happening. He is open to the world, he is, as *Scheler* has argued, ‘weltoffen’. He can make the world to an object of recognition; and he can reflect on himself and judge his own actions. Language as well as myth, art, technology, religion and even science are based on a symbolic interpretation of the world. “We can say,” so the argument of *Cassirer*, “that only man has developed a new form of intelligence: *a symbolic form of intelligence.*”¹¹ The symbolic form of intelligence therefore is the basis for the genesis of a new sphere of life: for culture.¹² Man as ‘animal symbolicum’ cannot live beyond any culture; he produces culture as the medium, in which he lives.

5.2.The limits of the method of objectivation: Intentionality and meaning are constitutive for the symbolic interpretation of the world

But how can it be explained, that this special form of ‘environment’, I use this term now in an analogous sense, has risen? Are scientific laws, genetic programs or the processes of the brain sufficient to explain the genesis of culture? Though, without any doubt, the genes determine the special form of human intelligence, biological principles cannot explain the genesis of symbolic forms.

Let us regard an example: Already the capacity to speak, which belongs to the biological potential of every normal child, develops only, if the child really has the chance to learn so speak during the first years of its life. If there is nobody, who will speak with it, it will lose the capacity to learn any language later in its life. There are only some years, in which a language can be learnt. This span of time is obviously steered by a genetic program. After it has passed over, a child can no longer learn to speak because of biological reasons.

But a language can be learnt only in a dialogue with other men, who speak one special language. Which language is learnt, is not determined genetically. And

beyond this the special function of the language cannot be reduced to a system of rules, which can be formalized logically. People speak with one another. They do not only exchange rational arguments, which are independent from their personality. For an intersubjective dialogue the meaning of words, the expression of what has been experienced and the understanding of their meaning by another person is fundamental. For all three steps the perspective of the first and the second person are necessary.

The meaning of the words will influence the behaviour and in consequence the common life, too. Language gains a historic dimension: The experiences, values and the aims of a culture are condensed in it and are handed down by its use to future generations.

A third effect has to be considered: By interpreting and expressing the own experiences by means of a certain language, the meaning of the words is transformed again and again by a lot of little steps. Language, as *Wilhelm von Humboldt* has said, is 'ergon and energeia', a product of the tradition and the manifestation of a creative process of an individual at the same time.

In consequence the language has three functions: It is a medium through which the world is experienced, the medium through which experiences are expressed, and therefore the medium for the dialogue with other men, too.

To cite *Plessner* one can say, that man is by his nature dependent on culture. On the one hand culture is a product of man; on the other hand it is the medium, in which the genuin human potential can develop. It now nearly seems as if one could speak from a process of feed-back, as the theory of system does. But is it really possible to use the concept of 'causality' in just the same sense?

Already sensual perceptions cannot be explained by physical stimuli and physiological processes only. Every sensual perception is directed by a certain intention, which cannot be explained completely by the causal influence of a stimulus. Only if the stimulus has been interpreted, if it has a certain meaning, we can say, that someone has perceived something. A sensual perception arises by the synthesis of stimuli, which act causally, and a specific intention as an expression of human consciousness. Both belong as inseparably together as the healthy eye, which is explained in its function by physiology, and the subjective expression of feelings and intentions by the eye; or as the body as a physiological organism and the body as the

expression of the of a person. Both belong together, though they are not identical. The gesture or the facial expression is not seen as a biological process only, but understood in its meaning by another person. Therefore the symbolic expression of the body, its 'language', is not identical with the scheme of the body in the brain, which is analyzed by science. In German we therefore differentiate explicitly between 'Körper' and 'Leib'.

The interpretation of the world is neither a simple reflection of pure facts, nor is it based on habits only; and, at least, it is not only based on mental construction. The world achieves its meaning for us only by the synthesis of the symbolic interpretation and the causal influence of the events on the human body as well as on the mind. Man lives physically in the world which he interpretes in the medium of symbols, which are created by his mind. The concepts of intention, meaning and expression cannot be objectified by the method of science; but without them it would be impossible that man understands himself, his relation to the world and to other people. On the one hand the human mind is depended on the world to be able to express itself; on the other hand the world, at least as far as we know it, exists only in the medium of symbols, created by man.

5.3. A multitude of symbolic forms

In the process of symbolization the events are differentiated from one another and therefore at the same time related with one another. The specific intention, which leads this process, determines how the world is perceived mentally, emotionally and sensually; and it decides how people will act. If the special intention, which combines the single acts of symbolization to a coherent scheme of interpretation, changes, the conditions of experience change, too, as *Cassirer* has demonstrated in the 'Philosophy of Symbolic Forms'.¹³ Art, religion and science are fundamentally different forms of interpretation; they cannot be reduced to one another. It would be wrong to argue, that science is of objective, - art and religion only of subjective relevance. All of them are a symbolic interpretation, based on specific forms of intentionality; but they differ in respect to the categories of time, space, substance and causality they differ. Culture as the genuin 'environment' of man as 'animal symbolicum' therefore consists of a multitude of symbolic forms. In each of them man understands himself and his relations to the world in a different manner.

The symbolic forms, and in consequence culture, too, have a historic dimension. Again and again new experiences, ideas and problems have to be integrated. Modern technology, for example, forces man to reflect on the foundations of ethics in a completely new way. The development of technology enforces a rethinking of anthropology, too. The holy books of other religions imply new ideas for the understanding of our own religion. In future new forms of interpretation and a new relation between the different symbolic forms may arise. Not self-preservation and reproduction, but selftranscendence is the genuine characteristic of man as a cultural being. The laws of culture, though based in biological processes, cannot be reduced to those of biology.

7. Religious experience

But still we have not yet taken into account all dimensions of human life: Though all living beings have to die and at least the more intelligent feel, when they will die, only man knows, that he will die long before he actually will die. Only he is conscious of himself and has an idea of time. He knows that his life and even that of the whole universe is finite. If we would interpret birth and death only scientifically, by biological or even physical categories, its true meaning would not be grasped. Seen under a scientific perspective, death is, as the biologist *Hans Mohr* argues, nothing more than 'the transition into the thermodynamic equilibrium.'¹⁴ In difference to this unaffected, sober statement the beginning and the end of life have an existential meaning for man. He himself is confronted with his being or not-being. Therefore the meaning of death can be understood only under the perspective of the first and the second person. The confrontation with the own death and with the death of a beloved person may even alter the aims and values of the daily life. Not physical or biological laws, but the meaning of this event causes an effect which can be observed by other people, too.¹⁵

The insight that life is finite leads nearly inevitably to the question, if there may be a being that is infinite, without a beginning and an end. Independent from the answer that may be given, it is characteristic for man to be open to transcendence. To be able to ask for a transcendent being is at least the origin of religion, too.

Religion is far more than a system of concepts, which are believed to be true by a special group of people. As science and as our daily life it is based on

experiences, too.¹⁶ For the medieval mystics the ‘*cognitio Dei experimentalis*’ was the definite aim of human life. Nevertheless a special set of categories is necessary, which differs from that used in science and in our daily life.¹⁷ I can only mention some aspects, which are important for the definition of life:

First, all religious experiences, too, must be interpreted by symbols. Even in this case the understanding of the experience is mediated by ideas, concepts, metaphors and images, formed by a certain cultural tradition and by the person itself, its character and its biography. The background of every person will modify the experience, even if its object, the divine sphere, may be identical.¹⁸

Beyond this, religious experience is based on the relation between man, who lives in time and space, - and a divine sphere, which transcends both. To bridge the gulf between time and eternity is characteristic for religious experiences.

In difference to scientific results religious experiences have a meaning for the whole person; they may transform all values and aims nearly at once. The person then may have the feeling to be reborn, not biologically or by initiating a new idea in cultural life, but in the spiritual sense of the word. Man never can return exactly to the same state, because he himself will have changed by the experience irreversibly. Therefore it is impossible to make the same experience twice. It is a main characteristic of religious experience, that the subjectivity of man cannot be neglected. Two observers will never make exactly the same observation; a variety of religious experiences is inevitable.

In Judaism as well as in Christianity, in Islam, Hinduism and Sikhism, God, whatever He may be imagined, is said to be pure life. He transcends matter as well as time and space. The absolute being has no beginning and no end, because there was nothing before him, which has caused him. God is, as Spinoza has put it, ‘*causa sui*’. He is not imagined as a thing, but as pure consciousness and as the foundation of the whole universe. Without this foundation the universe would sink back into nothingness. The concept of causation therefore must not be understood in a scientific sense. God is the ground of the world and does not act on it by physical laws and forces. He is the aim and the true sense of the universe as a whole. Therefore Cusanus as well as the Hindu-philosophers argue that God is beyond life and death, - if we understand these concepts in the human sense. He transcends all contradictions, those of being and not-being as well as those of light and dark. He is, as Cusanus puts it,

‘supra opposita’ and can therefore not be grasped by logic, proven by systematical experiments or observed by our senses.

The mystical traditions of all religions tell us, that in rare moments it may be possible, that man transcends the conditions of biological and social life. His own spirit may get in touch with the divine life. He now knows by experience that he participates in another form of life. Self-transcendence into a sphere, which is not created by man, is therefore the main characteristic of religious life. Only by self-transcendence this form of life may be preserved. The last aim of man is beyond history, and that means beyond time, space and matter: It is, as all great religions say, a form of eternal life. Though it is not bound up with genes, neurons and the symbolic interpretations of culture, man can talk about it only under the conditions of biological and cultural life.

8. Summary: Man as subject and object of the understanding of the world

Let me summarize: Human life is based on the interaction of physical, cultural and even religious forms of life. Man is by his body a part of nature, he creates culture by the symbolic form of his intelligence and he is open to a transcendent sphere. The cyclic structure of biological processes is necessary for self-preservation. But the dynamic of human life cannot be reduced to it. Self-transcendence is the main characteristic of man as a cultural and as a religious being. Causally enforced reactions and intentional acts coincide in the symbolic interpretation of the world, to which the humanities, language, art and religion belong as well as the sciences, as physics and biology. Man himself is the point of convergence of the different orders of being. Therefore a side by side of different theories cannot be accepted. In a paradigmatic manner the definition of life shows, that the separation of humanities, religion and science is based on a historic decision, which has its roots in the 15th century and which has to be overcome to-day. The completion of the different perspectives is absolutely necessary to be able to understand life, and above all human life, in its different relations to itself as well as to others and to the world.

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- ¹ More in detail: R.Kather: Was ist Leben? Philosophische Positionen und Perspektiven, Darmstadt 2003.
- ²Smith, J.M. – Szathmáry, E.: Evolution. Prozesse, Mechanismen, Modelle, Heidelberg/ Berlin/ Oxford 1996, 1.
- ³L.v.Bertalanffy. Theoretische Biologie, Bd.I, Leipzig 1932, 11ff.
- ⁴H.Maturana: Biologie der Realität, Frankfurt/M. 1998, 27: “Die Organisation des Lebendigen ist jene Art der zirkulären Organisation, in der die *Bestandteile*, die sie bestimmen, eben diejenigen sind, deren Synthese oder Erhaltung die zirkuläre Organisation selbst garantiert. Daher ist das Produkt des Funktionierens der Bestandteile genau die funktionierende Organisation, die diese Teile produziert. Es ist die Zirkularität seiner Organisation, die ein lebendes System zu einer Interaktionseinheit macht. Und es ist eben diese Zirkularität, die vom System erhalten werden muß, damit dieses als lebendes System erhalten bleibt und seine Identität durch verschiedene Interaktionen hindurch bewahren kann.”
- ⁵H.Maturana: Biologie, op.cit. 27: “Aufgrund der zirkulären Natur seiner Organisation besitzt ein lebendes System einen selbstreferentiellen Interaktionsbereich es ist ein selbstreferentielles System.”
- ⁶C.de Duve: Aus Staub geboren. Leben als kosmische Zwangsläufigkeit, Reinbek b.Hamburg 1997, 332: “Schon der kleinste Acker oder Tümpel ist ein multifaktorielles System mit einem hochgeordneten Geflecht dynamischer Wechselbeziehungen zwischen den beteiligten Pflanzen, Tieren, Pilzen und Mikroorganismen. Und solche Systeme bilden ihrerseits größere, noch kompliziertere Gewebe, die sich schließlich zu einem einzigen, riesigen Geflecht von unglaublicher Komplexität vereinigen, das die ganze Erde umspannt: der Biosphäre.”
- ⁷H.Maturana: Biologie, op.cit. 13 (Herv.R.K.). - H.W.Ingensiop: Auf der Suche nach einer anderen Biologie, in: K.M.Meyer-Abich (Hg.): Vom Baum der Erkenntnis zum Baum des Lebens. Ganzheitliches Denken der Natur in Wissenschaft und Wirtschaft, München 1997, 293-336, dort: 330: “Der operationale Systembegriff bleibt per definitionem immer partikulär, kausal und deskriptiv, ein objektivierender Erklärungsbegriff.”
- ⁸O.Neurath: Soziologie im Physikalismus, in: Erkenntnis 2/1931, 393-431, dort: 403: “Jede neue Aussage wird mit der Gesamtheit der vorhandenen, bereits miteinander in Einklang gebrachten, Aussagen konfrontiert. *Richtig (=wahr) heißt eine Aussage dann, wenn man sie eingliedern kann. Was man nicht eingliedern kann, wird als unrichtig abgelehnt.*”
- ⁹M.Scheler: Die Stellung des Menschen im Kosmos, Francke Vlg.: Bern/ München 1983¹⁰, 11f.
- ¹⁰I.Tattersall: Wir waren nicht die Einzigen, in: Spektrum Dossier 3/2000: Die Evolution des Menschen, 47.
- ¹¹E.Cassirer: Versuch über den Menschen, Frankfurt/M.1990, 60.
- ¹²Vgl. zur Funktion des Mythos: E.Cassirer: Die Philosophie der symbolischen Formen: Bd. II, Darmstadt 1987⁸.
- ¹³ R.Kather: Die Vielfalt der symbolischen Formen in der Kulturphilosophie von Ernst Cassirer, in: Revue Roumaine de Philosophie Bd.45, N1-2, 2001, 51-71.
- ¹⁴ H.Mohr: Wissen. Prinzip und Ressource, Berlin/ Heidelberg/ New York 1999, 45f.
- ¹⁵ C.Zaleski: Nah-Todeserlebnisse und Jenseitsvisionen, Frankfurt/M./ Leipzig 1993. - Knoblauch, H.: Berichte aus dem Jenseits. Mythos und Realität der Nahtod-Erfahrungen, Freiburg 1999.
- ¹⁶ Cf. W.James: The Varieties of Religious Experience, New York 1982. - H.Bergson: Die beiden Quellen der Moral und der Religion, Frankfurt/M. 1992.
- ¹⁷Cf. K.Ramakrishna Rao: Consciousness Studies. Cross-Cultural Perspectives, Jefferson/ North Carolina - London 2001².
- ¹⁸Cf. J.Hick: Religion. Die menschlichen Antworten über die Frage nach Leben und Tod, München 1996.