

SCIENCE AND RELIGION AS PARTNERS

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Before treating this subject in the light of Pierre Teilhard de Chardin's philosophy, I would like first of all to clarify the title of this lecture. And in doing so I hope to be able to make a contribution to Teilhard's work, which is truly revolutionary and has been compared as that of Galilei.

Using the definition in the Dutch Winkler Prins Encyclopedia, by *Science* I mean intentional and purposeful research for gaining understanding. This is done by hypothesis and theory. Although Science's objective is to reach definite results, it is evident that it cannot take on any definite form but is liable to grow, to expand, to correct itself and even cause radical changes of the current views. For many people science is the result of experiment and applied logic. However, primarily science should be looked at as an idea and enterprise of the human mind. Man keeps posing new questions and tries to find new answers, thus adding to the body of existing knowledge in his quest for freedom.

The encyclopedia's definition is much longer, of course, but I just want to briefly sum up the definition of 'science' as being an intentional activity of the human mind based on *hypotheses* and leading to justifiable solutions. Science as a whole can be seen as contributing justifiable solutions to the life and continued existence of mankind. We could even turn this around and propose that every intentional activity that contributes justifiable solutions to the life of the human species can be seen as science.

Now as for Religion

The Latin word 'religio' or 'religare' means: binding together. 'Relegere' means: observance or deference. Leaving alone the many interpretations given by theologians etc, my understanding of the word 'religion' is: the expression of mutual solidarity of men depending on supernatural or non-empirical reality.

Science and Religion as Partners

A fascinating title that challenges our thoughts as to their relationship. What of it? Do they get on well together? Do they need each other or not? When we look back at the definition of 'science' as an intentional activity of the human mind, we could ask ourselves if science needs or perhaps does not need religion which is dependent on a non-empirical reality. Whether the combination is or is not conducive to the continued existence of the human species.

The word 'Partners' we use in everyday life in the context of marriage and also in business. The implicit question of the title - whether partnership between science and religion may or may not further humanity's welfare could also be formulated "Can mankind propagate asexually?" or "Can a business survive when only its own interests are served?".

Indeed, science by itself intends to contribute to the life and existence of the human species, but can its solutions be called responsible when divorced from the partnership of dependency or reverence? If science expects to experiment autonomically, to whom or what is science accountable?

After this I am coming now to the lecture itself:

Science and Religion as Partners

Ladies and Gentlemen,

I may disappoint you by confessing that I am not scientist. I never even studied physics or theology. The reason why I am here is because I happen to be the president of the Teilhard Society in the Netherlands. Five years ago I took it upon me, something which can be seen as 'mission impossible'. As you may know Teilhard de Chardin was a Jesuit priest who was silenced by the Roman Catholic Church because of his work . Only after his death in 1955 was his work published by a number of friends, Julian Huxley, Arnold Toynbee and André Malraux. As is often the case, his work caught a lot of attention at first, but then the general interest flagged and now his work is forgotten. Science did not acknowledge him as a scientist, nor was he acceptable as a philosopher by theologians. For that matter, TdC himself, when asked, humbly denied being either a theologian or a philosopher, or even a prophet

Neither was his theory of evolution acceptable to biologists. It was altogether safer to adhere to familiar Darwinism as well as Mendel's theory of genetics and Hugo de Vries' Neo-Darwinism, which is now generally taught at universities.

You may well ask what I'm doing here. I'll give you my answer: Teilhard de Chardin's work affects me deeply and has continued to do so ever since the sixties, when I had just finished a paper on the author Franz Kafka. In his novel 'Der Prozess' we find the hero frantically looking for signs of his own guilt as a result of accusations from everyone around. More and more he is convinced of his own worthlessness. The whole question makes him a victim of society. Another example is his short story ' Die Verwandlung', where Gregor Samsa takes on the form of a beetle. He becomes the despicable insect for which he is held. In the end he gets thrown out with the garbage. Kafka's work stands as a model for human impotence for finding sense for his existence. How different from Teilhard whose work resembles physics clad in poetry. Although he had plenty of reason to become pessimistic because of the rejection by the Church, he never blamed himself nor others, but saw this in the context of the moment in time of the evolutionary process. He realised that human consciousness had not yet evolved enough for him to escape the tragedy. And even more important: through his work he inspired many and gave them hope and the conviction that every individual effort is meaningful.

The pessimistic view of life, that man is destined to go his lonely and misunderstood way, was replaced by Teilhard de Chardin's optimistic vision. He described the human being as the most advanced product in evolution, without denying human suffering.

His vision implies that everything has moved towards this result, with the utmost care from the Big Bang onwards. This teleological search can be seen as the quintessence of evolution. It dawned upon me that Kafka's quest in the labyrinth of possibilities can be seen as embedded in the history of our planet, indeed of the Cosmos. The progression on every level in evolution from so-called 'dead' matter unto human life is a veritable quest.

The scientist Teilhard describes this clearly in his book "The Phenomenon of Man". In the introduction he writes: "It should not be read as a metaphysical study, and certainly not as a theological exploration: this book is merely a scientific essay on physics and should be read as such".

After all these years I still tend to take Teilhard completely on this point. Contrary to those who call him a philosopher of phenomenology. Therefore I accept that Teilhard has given a scientific description. His main work "The Phenomenon of Man" treats evolution from the Big Bang up to and including mankind scientifically, in my view. Whether this is true may be established by science in years to come. I shall return to this issue later on.

What does it mean when Teilhard mentions the word 'scientific'? In any case it means a radical extension of the notion of what is generally understood by 'physical science'. It requires a new interpretation of the word 'physics', comprising many different areas of science, including the science of mind.

According to the established view physical science is involved in the research of matter, in that which can be verified. Professor dr. Gerard Nienhuis (here present today as a speaker also) says in his book "Het Gezicht van de wereld/Wetenschap en wereldbeeld": "Physical science is still involved in giving a continuous and closed image of the world. There is no room for non-physical causes. If we should want to maintain that reality can be reduced to natural effects we would undermine the significance of our minds."

I'd like to make two comments here. First of all it is clear that Teilhard's physical science has a much wider range. He incorporates the psychical into physics. Indeed, his premise implies that matter, from the beginning - so from the Big Bang, 15 thousand million years ago - has a conscious 'interior'. Simply stated: after the Big Bang, from a more or less conscious impulse to absorb information, atoms join to form molecules, molecules to form cells, cells to become organisms and they in turn to become living beings. As complexity grows, consciousness also increases which leads to a greater freedom of choice.

The evolution of the seemingly 'dead' matter of the prevital sphere to the living matter of the biosphere and further to the consciously living matter of us humans, the noosphere, clearly exemplifies a growing sense of freedom. Plantlife is earthbound, fixed to a specific place of growth, but animals can move around. However, where animals are still restricted to the specific characteristics of their species, human beings can choose how and where to go by flying, digging, swimming, building, walking, you just name it. My second comment would be that the significance of our thinking is not in any way undermined when we call 'consciousness' a natural fact, a physical function.

For with growing consciousness we experience ever more freedom of choice. Indeed, the choices we make will be more meaningful.

Teilhard, therefore, sees evolution as a development of consciousness and freedom of choice paralleling the increase of complexity. The great turning points in the history of our planet are evident: first the change from 'dead' matter into living matter - in other words from prevital sphere into biosphere - and the subsequent change from living matter into *consciously* living matter - from biosphere into noosphere. It is obvious that we cannot speak of a 'blind process' here. On the contrary, the process implies an increasingly conscious choice. If we should assume that our mind is no more than a blind neural process we should certainly never be able to make any distinction at all between true and false arguments, for instance. The mathematician Whitehead (1861-1947) connected this process of choice with his theory of evolution and gave it a firm theological foundation as well.

As Nienhuis and Herman Dooyerweerd do, we can go on describing the various aspects of our reality: physical, mental, historical, social and religious streams and declare that all these aspects are relatively separate and independent phenomena. which is true as long as we emphasize the word 'relatively'. For surely what all these human manifestations have in common is the inner impulse towards a growing complexity of consciousness as scientific insights are developing over time. These various aspects complement each other, like instruments on our way through life. It can be seen as a trip through unknown territory requiring a good compass, map and orientational skills as well as self reliance in order to survive. In the same way the unknown future demands the skillful use of all our resources.

After all this it will be clear that I can agree with Gerard Nienhuis' statement when he says in his book, "*There exists no separate physics of life*". Teilhard's approach is slightly otherwise, "*The building blocks of matter are the same whether 'dead' or 'alive'*". Here we have the classical scientist speaking. Physics includes building blocks and matter. But for Teilhard physics also implies a 'psychological' factor which gives form to matter/building blocks. Where Teilhard and Nienhuis differ in their outlook is where the latter states, "*The concept of consciousness has no meaning biologically speaking, neither has the concept of life any meaning in physics. Attempts to understand consciousness only as originating from the complexity of biotic matter are as futile as the idea of life being determined by physical laws of molecular structures*".

Here Nienhuis in the wake of classical physics, is in total disagreement with Teilhard de Chardin. For Teilhard consciousness is meaningful right from the start, namely as the guiding principle in the interior, the regulating principle giving form to matter and causing sudden change from anorganic into organic structures.

Consciousness is not the result of biotic material but rather the other way round. Teilhard explains life as resulting from an upward thrust, active in matter right from the beginning.

Later on Nienhuis concedes, "*Consciousness is not a blind product of the brain structure, but it enables us to use our minds*". In a similar way Teilhard does not regard consciousness as a blind product of matter, but as something that enables matter to grow into more and more sophisticated structures. Because of this the noosphere becomes another step upwards on the ladder, like the previous steps, the biosphere

and the prevital geosphere. The noosphere is the thinking mind level, stretching around the globe. Like the biosphere which gave rise to it and can be seen as one step down on the ladder of evolution. In the biosphere we find all the specific patterns of life, branching out through flora and fauna in its endless diversity. Likewise there are all kinds of different disciplines of thought in the noosphere, cultures, religious streams, philosophy, psychology, literature, theatre, marxism, hinduism, christianity, to name just a few. They all contribute to mankind's quest for meaning in our existence.

Of all these expressions of consciousness in the organism of life man is a cell. Nienhuis says the following in this context, "*Communication between cells takes place by exchanging information. It stands to reason to accept the various levels of reality as a fundamental ordering principle*".

Let us look at this more carefully.

How can we understand the exchange of information? Is it a new element, a characteristic of the noosphere, perhaps, or can it also be seen as an uninterrupted trend in evolution?

According to Teilhard the conglomeration of matter into greater complexity is made possible on a subatomic level by an impulse (*vis a tergo*) initiated at the Big Bang. It is the energy which enables the joining up. The 'conscious interior' creates a new structure by attracting the surrounding matter. The force of attraction in question he calls '*vis ab ante*', the pull from in front, the attractor. As soon as a point of saturation in consciousness comes about in the formed structure, a turning point arises leading to a more complex product. This process is called by Teilhard *the law of complexity-consciousness*. Consequently this law can be seen as a physical principle, or premise..

(By the way the word 'impulse' implies here an open system, as opposed to a closed system in physics. Teilhard's physics therefore can be called ultra-physical, or hyperphysics. Prigogine, in his work, has paid a lot of attention to open systems as defying *the second law of thermodynamics*) .

In this context I want to quote Roger Lewin in his book 'Complexity. Life at the Edge of Chaos' (1992): "Some years ago the physicist Murray Gell-Mann founded the Santa Fe Institute in New Mexico. It is here that scientists of various disciplines contemplate the miraculous qualities of chaos and order, the borderland where they meet being the origins of life, so it is thought. So-called complex adaptive systems exist in this area, a collection of elements which can read information from the environment to be used to guide its behaviour. Amoebae as well as human beings are examples. The question of the relationship between fundamental physics and the live world of consciousness leads to the ultimate question of what can be seen as fundamental: are they the particle theories, or something else? Murray's answer is simple enough. Chemistry, for example, consists of the behaviour of electrons around clusters of atoms, but even so there still remain chemical truths which are not directly physical truths. It seems that each level has its own irreductional laws which serve as additional information to the basic laws of science. The main part of Gell-Mann's book deals with trying to define the extra information relevant to life, to consciousness and to biochemistry". End quote (from a review by Martijn van Calmthout in De Volkskrant (7-5-1994). (N.B. Murray Gell-Mann is a Nobleprize winner for his research on quarks)

If my interpretation is correct, both amoebae and human beings are credited with the capacity to read information from the environment. Is this capacity the same as Teilhard's 'conscious interior'? Is it the consciousness that has been present in matter from the start, and which reacts and selects from the environment to which it is attracted? Evidently in Santa Fe, too, the scientific question is being asked, whether we should regard matters existing outside particle theory as belonging to fundamental physics.

I agree entirely with professor Nienhuis when he states, "*There is no reason to accept science's pretense of comprising everything without any reservations at all. True enough, its area of validity is unlimited and its boundaries are hard to delineate and it may be true that anything can be described in scientific terms. However, when all is said and done we cannot deny that phenomena and experiences appear to possess a kind of meaning that transcends scientific description*".

Teilhard would most certainly have subscribed to this remark. The significance of observed phenomena is surely not determined by their description only, but by their impact on human beings and their choices as a result of these findings to influence their well-being. The description of weather patterns, a comet falling or a volcanic eruption is of a different order from their meaning. The word 'meaning' cannot be seen as dissociated from ourselves as individuals or as groups in society. Science, and physics in particular is but one instrument we use to describe phenomena as accurately as possible so that its findings can be fitted in more consciously into our lives of everyday. To what purpose? Does it serve any purpose at all?

Teilhard declares that the law of complexity-consciousness has been at work during the entire evolutionary history. It is a universal premise, an all-encompassing phenomenon that can be described in terms of physics. The advance of evolution fits neatly into this law. Man's purpose in being here could be to be the bearer of this process. Indeed, consciousness has become aware of itself in man. This is why he has so much freedom. Options and possibilities of choice have never been greater before. We could even choose to end the evolution on earth altogether. Everybody realises today the immense potential for destruction available. And don't let us forget that these options have come into being because of the development of science.

In other words, it is because of his consciousness that man can reach conclusions and make choices based on scientific findings. He can use this knowledge to destroy - by using atomic or chemical weapons - and he can choose to make this earth a safer and happier place. Through better medical techniques, for instance.

Let me resume ... and I will go on repeating:

Teilhard's work is scientific. It describes the 4.5 billion years' evolution on our planet which have led to an increasing level of consciousness and complexity, which has taken place through mutual interaction. Thus we can draw up a scientific hypothesis, comprising 'one unifying theory' (something that Teilhard himself, though, never has done). This hypothesis describes everything as having an 'interior' which may be attracted by the appropriate 'exterior'. And at the same time freedom of choice grows with complexity. The grand unifying law of complexity-consciousness.

Everything strives towards more unification and unity. Mutual attraction builds (the exterior), whereas auto-attraction isolates and alienates.

This passage sums up Teilhard de Chardin's work. Its significance for us, human beings, does not so much depend on the description but on the application in everyday life and work. For a theologian the consequence would be different from that to, for instance, the historian. The baker, the engineer, the politician or the economist will all have their own sense of what it means in their field. But whatever we do, we all obey this law of complexity-consciousness. Indeed we can't help it, we are bound to - it is a physical phenomenon, a scientific law and it can be demonstrated and proven.

This law is not only valid for the material reality as Murray Gell-Mann demonstrates in the laboratories at Santa Fe, it also applies on the psychological level of existence. For instance, every pair of lovers is involved in an identical experiment. Physical attraction combined with emotional affection. When the attraction wears off we notice a slackening of attention for the other person, resulting eventually in alienation and perhaps divorce. Here also consciousness plays a major role. What it adds up to in the relationship is the degree of effort one invests in the partner. The best result, of course comes about when both partners feel satisfied as individuals, as well as the added quality of the partnership. Molecular chemistry shows a similar process on another level, when molecules cluster in immense rows to form proteins, for instance, adding more quality to the whole as well as remarking separate molecules.

You can ask, "Is not man reduced to a chemical formula by this comparison, to a material process, force and matter?" This would have been the case if Teilhard had not expanded physics to include the 'interior', 'consciousness', 'spiritual impulse', 'freedom of choice'. An 'interior', as we have said before, that is capable of 'reading', and therefore capable of appropriate response in the form of attraction and repulsion.

We can call this attraction 'love', as human beings. Teilhard uses this word as well as 'religio', meaning 'solidarity' in his work 'The Phenomenon of Man'. In this book the linear process of evolution from the beginning up to and including mankind is being explained. The laws he mentions are valid on every level of existence: the law of complexity-consciousness.

In his more ethical and mystical works Teilhard asked himself what a theologian could do with this law? A ununiversal law, of course, makes no exceptions, not even for theologians. As a priest Teilhard had to study theology - something he often hated as he confessed later on. The challenge was in seeing how this law could participate in the quest for the human 'interior'. He reasoned that true theology should guide us closer to God and should give us feelings of compatibility with His creation. Authentic theology should bind, not separate.

(In this context we can remember the German poet Gotthold Ephraim Lessing who, in his play 'Nathan der Weise' wrote that true religion can be recognised only by its fruits of love. This statement gave rise to much indignation among theologians at the time, especially when the playwright claimed that both judaism and christianity, as well as islam have a right to credibility. Nowadays a remark like this would hardly create a stir and would bring relief rather than anger).

Atoms are either attracted towards each other or repel each other. Thus they form molecules of greater complexity, according to their disposition. Theology-consciousness, therefore, must seek and has to be attracted towards total divine consciousness. Throughout the centuries the Bible and its interpretations should ideally be a witness of this quest in order to be truly called a 'revelation'.

At all times many different people have appealed to the Bible interpreting it allegorically, symbolically and historically. But, as Dante emphatically expressed in his 'Divina Comedia': "On each level of consciousness we can follow man on his quest through life, however the overview can only be reached when all levels can be observed at once." You have to be open to all levels, to all aspects. The effort of interpretation in religion should not only be from a historical view, or from an allegorical or symbolical perspective. No, the effort should be directed towards clarity in every way. (Dante, as you probably know, in his endeavours, was led through hell by Vergil in the 'Divina Comedia'. He encountered there many examples of inappropriately-used consciousness. And not only of villains, but also popes, kings and tradesmen were dwelling there. By their selfishness during their lives, and their lust for riches, power and sensuality they had brought about misery on earth. In poetical terms Dante gave us this vision to hold up a mirror to us all).

Allegorically, Dante shows us insights into history, into politics, into sociology and characterology. This tends to support Teilhard's evolutionary tenet: the streams of convergence and divergence, the streams of attraction and repulsion. The measure of self-involvement decides the outcome, or otherwise the measure of altruism. When Dante ascends the mountain of purification it is Beatrice's unconditional love that brings him into paradise.

Today's lecture is titled: "Science and Religion as Partners". I am hoping that, so far, I have been able to make it clear that science and religion are compatible. For both are based on the same all-encompassing law of complexity-consciousness leading to more and more solidarity. In order for them to make good marriage-partners, though, there must be a lot of goodwill and acceptance on either side. The will to bind and not separate. This requires effort and mutual understanding as well as the concern for each other's welfare. Releasing self-interest in favour of the two-in-oneness of a partnerrelationship.

Business partners have much to gain by the kind of cooperation that provides enough space for each other's success. As a result exterior influences get attracted for mutual benefit. The two-in-oneness of the partnership also has a 'conscious interior' that attracts or repels the 'exterior'. A complex teamwork showing the increase of complexity-consciousness is the outcome. We must realise that the combined action only works when both partners are happy.

Since Dante and Lessing this consciousness has grown considerably, and not only qualitatively. Their work already reflects the essence of life. At the same time this insight is present in the myths of many peoples and cultures, and it has been for aeons of time. The growth of consciousness can be seen in a quantitative sense, too. More and more people - mankind - start realising that a lot needs to be accomplished worldwide generally.

This should be the objective of all our efforts in creating proper partnerships, in theology, in science, in economy and so forth. Whether they are personal and private, or whether they concern business.

How come that consciousness has grown so much?

Why is it that nowadays hardly anyone - at least in our Western society - is so absolutely sure that his (or her) faith is the only valid one, as was the case in Lessing's time? Isn't it because of the advance in science and technology? The world has now become a global village. We are no longer isolated. We get confronted with various religious and cultural patterns all the time. We are part of a global network which seems to make our own situations and experiences pretty relative. Not only the reverend Paisley fulminating on the TV screen (showing us that christianity is not always quite what it pretends to be), but the pitiful images of thousands suffering in third world countries cannot go unnoticed. We are becoming conscious of the fact that it is not only in their interest, but ours too when we make the right decisions to alleviate their plight. For if we don't, we may have to pay the price later, perhaps like the popes and cardinals who Dante encountered in hell.

Scientists have often said that Teilhard's hypothesis cannot be proven. However, the situation in the world around us shows beyond doubt that building involves taking care of your fellow-beings, whereas lack of attention and rejection of others leads to destruction. Man lives in the laboratory of life where he experiments. Our choices get recorded in scientific reports in every field. Teilhard's hypothesis: that evolution benefits from making right connections and promoting welfare for others is proven every day.

Many of us have become extremely upset by the negative images of reality and have withdrawn as a consequence. A large portion of New-Age followers escape in body-culture and in trends that promote self-unfolding and inner peace. Others indulge in materialistic lifestyles and hedonism. It is important that we take the christian message of neighbourly love seriously, so as to end the situations where people are prevented from unfolding and developing talents and skills so that they can participate fully in society.

It should be the uppermost priority in science and technology, as well as for religions and politicians, to end hunger, poverty, insecurity and inequality in the world. But what we still see is nationalistic economic power, the increase of exports, market interests etc. as priorities. Teilhard points out that the more people inhabit the earth, the greater the need for sharing our resources and creating more understanding. The other side of the coin, annihilation through war and strife by the use of destructive weaponry in order to create more space, is untenable. Deep in our hearts, on a semi-unconscious level, we know that we would destroy the whole planet earth itself.

Science and Religion as Partners

I'd like to quote the following from a book by prof. dr. A. van den Beukel 'De Dingen hebben hun geheim' (roughly translated: 'The Mystery of Everything'): "All previous revolutions in science, whether Copernicus or Darwin, have removed man from the centre of the universe and have reduced him to the role of onlooker in the cosmic drama. Quantum revolution brings man back to the centre of the stage. Or, as the famous physicist Niels Bohr once remarked, "We are not mere onlookers, we are the actors in nature's big drama". Some physicists, like John Wheeler, even think that the entry of information into the observer's consciousness is the decisive process of establishing reality."

The great play enacted here on our planet is the drama in which we figure as actors. It is we, ourselves, who bear responsibility for the play. Together we create, improvising along, according to our fellow-actors' cues. Life becomes an art, art becomes alive.

But for whom are we acting? In any case for our own pleasure. The joy of playing. How wonderful to see how we get more and more sensitive to each other. What grace, what beauty the actors display, what elegance, what ingenuity. What a diversity of new ideas. We are learning to appreciate each other more and more. We are getting better at playing. We are playing our roles more perfectly all the time. It seems that we are becoming more identified with our roles. And as we admire the others, they in turn find themselves appreciated.

Life as a play takes the place of the old concept of living in a labyrinth. In Kafka's labyrinth man is searching for his guilt. 'Why am I being denied? Why do I have to suffer?' Introversion. In the world of art and play man is attuned to the other. He creates a world of sensitive connectedness in accordance with his 'interior'. It may be called religious in the original meaning of the word: binding and reverential desire towards that which surpasses our normal understanding.

So far the direction of mankind in all its diversity is not in contradiction, but rather in agreement with the various phases of evolution, as expressed in the physical law of complexity-consciousness. Evolution is being supported by a convergent stream of consciousness.