

An absurd story about an archaeologist.

Let us begin with a strange story from the distant future of 5050 A.D. That year an archaeologist is excavating an old city which was totally destroyed 1997 in the great earthquake in North America. One day he discovers an interesting object made of stainless steel. At first he can not understand the function of this object or its application. It takes a lot of intelligence, effort and cooperation with other scientists until the secret is revealed. After months of hard work the archaeologist finally concludes that the object must have been a valve system of a primitive heat-pump (i.e. primitive from the technological perspective of year 5050). The valve system is obviously manufactured by a rather advanced industrial robot. Consequently no human being has been directly involved in the making of the heat-pump.

Eventually an article describing the find is published in the still famous scientific magazine *Nature*. A couple of weeks later the following can be read on placards all over the world:

Sensational finding from 1990 A.D.

Archaeologist discovers a complicated mechanism that probably has arisen by itself. The whole scientific society is excited. It seems that tools, engines maybe even computers can originate spontaneously in nature.

I am sure many readers want to stop right here.

Why spend time reading such nonsense as this?

But please continue, and I assure you that it all will make sense later on!

The above dubious conclusions of the newspaper journalists are evidently based on the not uncommon assumption that if you can explain the mechanisms behind a phenomenon and its origin, you have accordingly proved that there is no creator or originator behind it.

But is such a conclusion correct in this context?

However, before we try to answer this question, here's a story from real life.

CRICK vs DALI.

In 1966 a book with the title *Of Molecules and Men* by the Nobel prize-winner Francis Crick^[1] was published. He had a few years earlier together with his colleague James Watson discovered the double helix structure of the DNA-molecule. In this book, which tells the story of their great discovery, there is a quotation from the eccentric Spanish artist Salvador Dali. He says:

And now the announcement of Watson and Crick about DNA. This is for me the real proof of the existence of God.

Crick evidently finds Dali's statement a tremendous joke, and though Dali's intent was surely serious, Crick is making fun of him. Far from having proven the existence of God, so Crick intimates, the achievements of molecular genetics have made religious beliefs even more superfluous and outdated than they had been before the structure of DNA was discovered. For the materialistic Crick each new scientific success reduces the importance of God, while according to Dali more and more of God is revealed as science advances. Certainly many readers smiled at and maybe even found the preliminary story about the archaeologist very naive.

But isn't this in principle the way Crick and many others together with him reason?

As soon as they can give a scientific explanation of the mechanisms behind an observed phenomenon and its origin, the thought and idea of an intelligent creator and originator is immediately excluded. At school students are in this spirit often taught that the theory of evolution and modern cosmology have proved beyond all doubt that Genesis is totally wrong, that there is no creator of the universe, the earth, life and the different species, and that all that exists, has evolved from nothing through the mechanisms of chance and necessity^[2].

Of course you could object to the analogy between a valve system manufactured by a robot and natural phenomena governed by "blind" scientific laws. If you state that the origin of stars, planets, life etc can be completely explained by physical laws, you must however also be able to answer why these laws are what they are! For instance, even a small change of the law of gravitation would make the existence of planetary systems impossible, as the orbits then would become unstable. After such a gravitational change, the slightest disturbance of a solar system from another celestial body would cause the planets to go away from, or approach, the central sun in spirals with evident consequences for living beings on those planets.

Just as we use tools -- or even industrial robots as mentioned above -- to manufacture various products, the laws of Nature can in this perspective be regarded as God's tools for creating, if not all, so at least many of the phenomena we can observe in nature^[3]. While the computer program that controls the industrial robot is written by humans, the program of the universe -- the laws of Nature -- is similarly written by the Creator Himself. In my opinion the above analogy therefore is justified.

GOD OF THE GAPS

Until the middle of the 18th century great scientists such as Johannes Kepler, Isaac Newton, Wilhelm von Leibniz, Carl von Linné etc were all of the opinion that they, through their scientific discoveries, understood more and more how the Creator had thought and acted when he created the universe. When Kepler after many years of hard work had discovered his three laws, describing the planetary orbits around the sun, he bent his knees to God and thanked the LORD for allowing him to understand some of the beauty and harmony of the creation.

Newton, who besides being a scientist par excellence also was a man of God, did not maintain that the discovery of e.g. the law of gravitation in any sense reduced God or made Him less necessary or important. On the contrary! He asked:

Whence is it that Nature does nothing in vain and whence arises all the Order and Beauty that we see in the World?

His own answer to this was -- God!

However, at the end of the 18th century and at the beginning of the next century a shift in perspective slowly took place. More and more thinkers and philosophers began to cherish the opinion that progress in science meant a real and serious reduction of God's power and that such a progress might even threaten His very existence. This eventually led to what we today often call *God of the gaps*. The meaning of this concept is that reality is divided into two mutually exclusive areas:

1. God's area -- where faith and feeling are important.
2. The scientific area -- where reason and logic are the main components.

All that could be explained rationally and scientifically was assigned to the area of reason and logic. When this area rapidly grew during the latter half of the 18th century, many philosophers concluded that "God's area" simultaneously decreased. The scientific explanation of the mechanisms governing the universe was supposed to intrude upon the Christian explanation of the meaning of the creation. When science at the end of the 19th century seemed to be able to explain almost everything observable, a majority of scientists felt that it was no longer necessary to believe in or assume the existence of anything supernatural or divine.[\[4\]](#)

Let us give an example.

The old Vikings believed that thunder and lightning was caused by one of their gods -- Thor -- when he was fighting with the giants and threw his hammer, Mjolner. A god was used to explain what at that time could not be explained rationally.

Today we can give a scientific explanation of thunder, which is mainly an electrical phenomenon. As thunder today can be explained by physical, rational laws without alluding to anything outside the closed physical world, there is no longer any need for assuming divine power behind it.

According to this way of reasoning, there is only place for God as long as there are gaps in our rational knowledge. God is more and more pushed out and eventually "he will hang on his fingertips on the windowsill outside the window". When science some day in the future is able to answer the final question, it will be as if somebody had stepped on God's fingers. He will loose his last, desperate hold on mankind and fall into the abyss and disappear for good. This was e.g. what Karl Marx was convinced eventually would happen. How wrong he was! If anything was going to disappear, it was Marx' own teachings.

Characteristic of that time was the famous mathematician Pierre Simon de Laplace (1749-1827) who, using Newton's laws as a basis, had formulated the mathematical equations for the orbits of the celestial bodies. When Napoleon asked him why God wasn't mentioned in his works, Laplace replied, "I have no need for that hypothesis".

It is not difficult to understand why this way of reasoning was popular among zealous atheists. Unfortunately a majority of Christians swallowed the bait, "hook, line and sinker" and started to defend their faith from this new position. Instead of criticizing the erroneous way of argumenting, proposed by the "God of the gaps" proselytes, they accepted it.

"This can not be explained scientifically so God is still needed"

or

"If we want to believe in a great God, science must not be allowed to explain too much"

became the accepted way of thinking. Many Christians thus tacitly accepted that if science were one day able to explain all that is observable, there would be no God -- or at least no need for God -- a way of reasoning totally alien to Kepler, Newton and many of the other pioneers of science. Kepler himself once said:

"That day is impending when people will admit the pure truth both in the book of Nature as well as in the Holy Bible and rejoice at the harmony between these two revelations."

A very good illustration of the "God of the gaps" is found in the debate that took place among chemists at the beginning of the last century. The issue at stake was whether it was possible to make organic compounds out of inorganic. Nobody had managed that so far. Christians and many others insisted that organic compounds contained some kind of a nonmaterial, supernatural "life substance". This theory was called *vitalism* and was

used as an argument from the Christian side to prove that it was impossible to explain the world without considering God. However in 1828 the German chemist Friedrich Wöhler managed to synthesize urea^[5] from inorganic compounds. God once again had to retreat one step further out on the windowsill and many Christians presumably felt their faith waver. Not because Wöhler's discovery as such threatened the Christian faith, but because they had fallen into the trap of the "God of the gaps".

This trend was to have a disastrous influence on the Christian Church. One of the worst consequences of the "God of the gaps", *liberal theology*, originated during the last century and was perhaps the most dangerous attack on the true Gospel since the Gnostic threat about 1900 years earlier. According to liberal theology everything supernatural and miraculous in the Scriptures is denied, and the Christian faith is reduced to a social and powerless message with hardly anything at all in common with the Biblical revelation.

MECHANISM-- MEANING.

The weak point in the "God of the gaps" way of reasoning is that reality is reduced to "nothing but" physical mechanisms. The obvious fact -- from the human standpoint -- that every aspect of reality can be looked upon from two different viewpoints, *mechanism* and *meaning*, is disregarded. The Nobel prize-winner Ilya Prigogine talks about this tendency to deny everything that can not be expressed in scientific terms in his book *From Being to Becoming*.

The dynamics of Isaac Newton, completed by his great successors such as Pierre Laplace, Joseph Lagrange and Sir William Hamilton, seemed to form a closed universal system, capable of yielding the answer to any question asked. Almost by definition, a question to which dynamics had no answer was dismissed as a pseudoproblem. Dynamics thus seemed to give man access to ultimate reality. In this vision, the rest (including man) appeared only as a kind of illusion, devoid of fundamental significance.^[6]

To deny the existence of meaning is to deny everything that is important to us as human beings! Einstein once said about scientists denying the miraculous order of the universe,

"Don't listen to their words, fix your attention on their deeds".

I think this principle could also be applied to philosophers who deny the existence and importance of meaning and purpose. Besides demanding that a worldview should be consistent and agree with observations, it must also be "livable" -- i.e. it must be possible to live consistently according to this worldview. Those who deny the existence of meaning, permanently -- 24 hours a day -- deny "their own words with their deeds".

According to John Murray, "reason is the capacity to behave in terms of the nature of the object".^[7] To deny the existence of meaning and the limitations of science is actually to maintain that, "the nature of the object ought to conform to my definition of reason".

All important human questions are connected mainly with meaning and very little, if at all, with mechanism. Or as John Polkinghorne writes:

The inescapably personal character of knowledge will be respected and we shall not give way to a "passion for achieving absolutely impersonal knowledge which, being unable to recognize any persons, presents us with a picture of the universe in which we ourselves are absent".^[8]

Science solely explains the mechanisms behind material objects and their interactions. The arena in which these objects and interactions dwell and happen is the so called space-time (the physical universe). The advances of science occurs on the level of mechanism. Thus the progress of science does not in any sense affect the level of meaning. Mechanism and meaning are two different levels of explanation, not reducible to one another but both necessary to get a full understanding of the world we are living in. God, who is the originator of meaning (and mechanism), is therefore not less necessary just because science partly can explain the mechanisms behind the creation. Science and faith are not mutually excluding but complementary. Charles Alfred Coulson, professor in mathematics in Oxford, expresses this in the following way:

Religion [meaning] and science [mechanism] are two alternative approaches, which though apparently irreconcilable, are both true, being complementary to each other.^[9]

The God of the Bible has created everything, both meaning and mechanism! He is not banished to the esoteric heights of the upper level, while the lower level of physical phenomena is totally independent of Him.

As mechanisms are rational and operate in the physical realm they can however, unlike meaning, be studied and exhaustively analysed by human reason, assisted by the tools of the scientific method. The mechanism, by no mean gives us the whole truth. Even if the explanation of the mechanism behind a phenomenon is true, it is a greater lie because of what it does not consider.

Suppose that we want to study a particularly beautiful painting.

We want to answer the question, "Why do people find it so beautiful?".

We might first ask a physicist to study the painting and to give us a complete, physical description. After having done a lot of experiments he gives us his conclusion. According to this certain areas of the painting absorb certain wavelengths of the incoming light. We also get a detailed description of the molecular arrangements and

interactions in the paint etc. If we ask the artist if he thinks that this description is complete he looks very offended. From his point of view the physical description is totally uninteresting.

We then ask a chemist to give us a description from her perspective. She starts to talk about the different chemical compounds in the different colours etc. Neither does this description give us any idea of the true nature and purpose of the painting.

Not even the analysis made by an expert in art satisfies the artist. The expert makes a statement that the style of the painting is expressionistic and that the technique used for mixing colours is typical of some professor in Paris. This may be true, but nothing of this deals with the internal or implicit message of the painting -- the "why?".

Finally we let a person who loves art^[10] look at the painting. He is moved to tears by the beauty he finds. He might not be able to express what he feels in words, but his tears tell us enough. The artist is at last satisfied. The painting has fulfilled its purpose, to talk to another human being in a meaningful way.

The first three descriptions -- from the physical, the chemical and the science of art perspective -- are as already pointed out of course true, but are only different descriptions of the mechanisms. Science can not, and will never be able to, explain and describe the meaning or purpose of what we observe. Science answers the question, "how?", while meaning is always associated with the question, "why?". Meaning can never be reduced to mechanism. Logical reasoning -- the foundation of modern science -- formulates conceptions, which are manipulated according to the laws of logic. As the meaning of the painting includes the human experience, this meaning can neither be described by logic nor by words. It can only be "felt within our hearts"!

This does not mean that the aspect of meaning is less valuable or important than the aspect of mechanism, but is rather a consequence of the limitations of rational thought. Logic does not give us access to the entire reality. If that were the case, the painting could be completely replaced with a logical description. Instead of going to an art museum to look upon *Wheatfield with Crows* by Van Gogh, you could just send for a complete logical description of the mechanisms behind this painting and get exactly the same experience.

Not even the meaning of a novel or a poem can be expressed by words. This might sound a little bit strange as the tools of an author are words and nothing but words. Artists, authors, composers etc, however often try to express what can not be communicated by words -- the unspeakable. What a poet tries to tell us, is for that reason more frequently found between the words and the lines than in the words themselves.

The laws of Nature give us a closed-world, cause-effect description of the interactions between material objects. Science does not and can not explain the origin or the nature of the physical laws or how something originated out of nothing. This is one of the limitations of the scientific method. The law of gravitation for instance explains exactly how the moon is orbiting around the earth. An explanation why this law is as it is, can however not be given by science. The Christian answer is found in many places in the Bible, among others Genesis 1 and in Psalms 148.

Praise the LORD from the heavens, praise him in the heights above.
Praise him, all his angels, praise him, all his heavenly hosts.
Praise him, sun, and moon, praise him all you shining stars.
Praise him, you highest heavens and you waters above the skies.
Let them praise the name of the LORD, for he commanded and they were created.
He set them in place for ever and ever; he gave a decree that will never pass away. (Ps 148:1-6)

God has created the laws of Nature to support His creation, so that Man can exist. God has created the phenomenon called gravitation. The nature of gravitation is described by Newton's law of gravitation. This law gives us a complete description of the moon's orbit from the mechanistic, causal point of view. Science is however only concerned with this closed-world, mechanistic causality, while God is the originator of all the creation, meaning as well as mechanism.

In Genesis 1 we read about the creation of light:

And God said, "Let there be light," and there was light. God saw that the light was good, and he separated the light from the darkness.(Gen. 1:3)

God created light because light is something good. He only creates what is in accord with His own character. The Biblical account gives us the meaning behind the creation of light. The other perspective, the mechanism of light, is given by Maxwell's famous equations:^[11]

These equations describe the nature of light and more generally all types of electromagnetic radiation. They are used in optics, when constructing radios, computers etc., and are regarded as some of the most important physical relations.

There is no contradiction between the perspective of Genesis and that of Maxwell's equations. When God spoke, these equations were exactly what He said. That Man has been able to find out what God said does not lessen the Creator, but is rather a proof that we indeed are created in His image!

One common misunderstanding is that the laws of science have a governing or controlling function. This is however wrong! The physical laws do not "tell" Nature how to behave. Their character is instead describing.

They describe and summarise -- from our limited perspective -- the observed regularities of the physical world.^[12] If this means that every single atom is controlled by the almighty Creator or if this is taken care of by the inherent mechanisms of the laws of Nature is not clear, nor does it matter.

The rational behaviour of matter and energy is -- from this point of view -- a consequence of the Creator's logical nature and of His fidelity. Miracles -- i.e. the irrational^[13] behaviour of matter and energy -- are similarly a consequence of the Creator's love!

Christian faith and science.

We are in a very vulnerable position if our faith depends upon whether science can explain certain observed phenomena or not. This is to accept the false "God of the gaps" way of reasoning. If our faith is threatened by every new evolutionary or cosmological model, we end up in an untenable position. We then have to choose between two alternatives; to give up our faith right now or to keep continuous track of the latest developments in evolutionary biology and cosmology to be able to find counterarguments. If no such arguments can be found, faith must accordingly be abandoned.

There are many historical examples of Christians who have declared, "This problem can never be solved by science", only to be proved wrong a few years later amidst roars of laughter.^[14] If I remember rightly an English bishop at the end of the last century claimed that he had proved the impossibility of building an airplane by the argument, "If God had meant that we should fly, He would have given us wings".

How difficult it is to predict what science and technology can achieve is shown by the following episode. In 1956, when I went to junior high school, I once had a fight with a classmate about whether space travel one day would be possible or not. My own opinion was that Man probably would land on the moon within two hundred years or so. Who could have guessed that Neil Armstrong would take his first hesitating footsteps on the surface of that very celestial body only twelve years later.

In my book^[15] *Faith and Science, two ways to a Worldview* I criticised the common view that fundamental Christianity is always in opposition to modern science. I claimed there that instead modern science is a consequence of the Judeo-Christian worldview.

The philosopher and mathematician Alfred N Whitehead (1861-1947) said in 1925, when he lectured at Harvard University under the title *Science and the Modern World*:

Christianity is the mother of science because of the medieval insistence on the rationality of God.

The belief in a rational God gave the first scientists an unshakeable faith that each event can be linked together with a cause in an exact and distinct way. In that manner you can discover general principles in nature. Without this belief the indefatigable labour of the scientists would be in vain. The philosopher N Maxwell says in the same spirit:

Science constitutes a search for an underlying simplicity, unity, harmony, order, coherence, beauty or intelligibility which we conjecture to be inherent in nature.^[16]

An atheistic scientist has no foundation for such a statement. If there is no intelligent Creator there is no reason to conjecture that there is an inherent order in nature. Albert Einstein once remarked concerning this issue:

You find it surprising that I think of the comprehensibility of the world...as a miracle or an eternal mystery. But surely a priori one should expect the world to be chaotic, not to be grasped by thought in any way ... and here is the weak point of positivists and of professional atheists, who feel happy because they think that they have not only preempted the world of the divine, but also of the miraculous.

In another context he said:

Certain it is that a conviction, akin to religious feeling, of the rationality or intelligibility of the world lies behind all scientific work of a higher order. This firm belief, a belief bound up with a deep feeling, in a superior mind that reveals itself in the world of experience represents my conception of God.

Thus it was no coincidence that modern science was born under the influence of the Judeo-Christian culture. True Christianity is not hostile to science, but a condition for modern science.

In the worldviews of the East the starting point is that all observations are of an illusory character. A Hindu considers that the western (Judeo-Christian) division of reality into opposite poles as true-false, good-evil etc. is a sign of an immense immaturity. The Hindu philosophers regard our conceptions as empty of content.

Conceptions as true, false, good, evil are to them Maya, i.e. void and illusion. However the Eastern way of thinking which also includes the view that something simultaneously can be true and false, does not work when

we study physical reality. Two-valued logic, i.e. the assumption that a proposition is either true or false, is one of the foundation stones of modern science.

It is therefore not difficult to understand why science neither was born in India nor in China.[\[17\]](#) The prevailing worldviews in these countries effectively prevented that.

THE ABILITY OF MAN.

Hopefully we can all agree that there are at least some physical phenomena, whose origin can be explained scientifically with the help of scientific laws. Development of low and high pressure systems, islands that arise through volcanic activity or perhaps a star that is born out of condensing interstellar matter under the force of gravitation are all examples of such phenomena. However, for a scientific explanation to be 100 percent complete, science must also be able to answer the question why the laws of Nature allow such processes to happen.[\[18\]](#) Why are these laws what they are? This calls for laws for the physical laws, *metalaws*.[\[19\]](#) A complete explanation then demands that we find laws for the metalaws, *metametalaws* and so on, ad infinitum. We end up with an infinite regress. A scientific explanation is therefore never closed and complete. It is always based on laws, whose "first cause" (metametameta...) lies beyond the scope of the scientific method. That is "why physics needs metaphysics, for its intellectually satisfying completion".[\[20\]](#) The question "why?" -- related to the aspect of meaning -- can only be answered at the infinitely remote metametameta...level. A level that unfortunately never can be reached by closed logical systems.

The origin of the universe is a phenomenon that definitely can not be explained scientifically. To give such an explanation is in my opinion in principle impossible. Before big bang (the creation), according to the most recent cosmological theories, neither matter, nor energy, nor space, nor time existed. We then have two alternatives. If no physical laws existed before big bang, there is no hope whatsoever that we will find a scientific explanation of the origin of the universe. If on the other hand there were physical laws before matter, energy, space and time, it is difficult to understand in what meaning they did exist. They could not manifest themselves physically in any way. Plato's answer would be that "they existed in the abstract world of ideas", while according to the Bible the answer must be "in the thoughts of God". Both these answers presuppose something outside the closed physical world. Such a presupposition is however not compatible with the scientific method.

There are other phenomena that I strongly believe are scientifically inexplicable e.g. the origin of life and the origin of self-consciousness. Much more could be said about this subject but we are not going to penetrate these questions further.

Between the above extremes there are many phenomena that might or might not be explained scientifically[\[21\]](#). Examples are the evolution of different species, the origin of planetary systems etc. Whether such phenomena completely or partly can be explained (with the reservation made earlier about metameta...levels) is still an open question. Under all circumstances such an explanation will only deal with the mechanistic level.

It is important that we never underestimate the ability of man! God has created us more marvellous and wonderful than we perhaps realise. We are created in his image!

For thou hast made him a little lower than the angels, and hast crowned him with glory and honour.

Thou madest him to have dominion over the works of thy hand; thou hast put all *things* under his feet.(Ps 8:5-6)

And the LORD said, Behold, the people is one, and they have all one language; and this they begin to do: and now nothing will be restrained from them, which they have imagined to do.

(Gen 11:6)

The God I believe in, could have created everything in six 24-hours periods about 6000 years ago. The Bible however is not entirely distinct about this. The Hebrew word used for day in Genesis -- jom -- can also mean period, year etc. I personally believe that the universe is much older than 6000 years and that the creation lasted more than six days. The total impact of all the scientific methods of dating such as; C-14 and other methods using radioactivity, sedimentation on the ocean bottoms etc speaks for itself, although we at the same time must remember that all these dating methods are uncertain and often based on more or less daring assumptions. I may be wrong, but I don't think this is an essential question. That Man is such a wonderful creation that he to some extent can explain and understand the mechanisms behind the creation, does not lessen the Creator. On the contrary! Since the Christian faith is based on the one and only truth, there is no reason to be afraid of or deny true science. The truth, whether scientific or spiritual, will always glorify and honour God!

This is what the LORD says -- Israel's King and Redeemer, the LORD Almighty: I am the first and I am the last; apart from me there is no God. (Isaiah 44:6)

Embracing a certain theology or a certain hypothesis about the mechanisms behind the creation does not save us. God is immensely greater than we can understand with our limited intellect. We are saved by grace, through the blood of Jesus Christ! To be a Christian is not to limit God with our own intellectual speculations and pride, but to love Him and to live in a personal relationship with Him.[\[22\]](#)

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[1] University of Washington Press, Seattle 1966.

[2] That this conclusion is not obvious is evident from the fact that for instance the big bang hypothesis was formulated by a Belgian priest, abbé George Lemaître. He was also a physicist and expert in general relativity theory. The scenario given by big bang was according to Lemaître compatible with the instantaneous creation described in Genesis 1.

[3] My personal point of view is that the origin of many observed phenomena can be explained by physical laws, e.g. the origin of stars from interstellar dust, the origin of planets, moons etc. A phenomena that definitely can not be explained by physical laws is the origin of the universe. The origin of life is another phenomena which I am convinced implies a Divine intervention. As far as the origin of species goes, I can theoretically think of three alternatives: An evolution governed by scientific laws (probably new, still unknown laws, i.e. not darwinism), creation under the direct control of God (not explainable scientifically) or a combination of the first two alternatives (part of the creation -- microevolution -- can be explained by scientific laws, but God has also intervened in the process -- macroevolution). Personally I believe in the last alternative. The first is as I see it the least probable but can not be excluded logically.

[4] The reason for this was that many people by now had lost their belief in a personal God. They had no living faith, had never met God personally, only used Him for "explaining" the unexplainable.

[5] Soluble colourless crystalline compound contained especially in urine of mammals.

[6] W.H. Freeman and Co (1980), page 3.

[7] Torrance, T.F. (1969), *Theological Science*, Oxford University Press, page 12.

[8] See note 20 (page 90).

[9] *Christianity in an Age of Science*, Oxford University Press, London 1953.

[10] Of course the physicist, the chemist or the art expert can, besides being professionals in their own subjects, also simultaneously be lovers of art.

[11] Here the equations for vacuum is given.

[12] Which means that exceptions from these regularities -- miracles -- fall outside the scientific area of competence.

[13] Irrational from the scientific point of view.

[14] As Christians we should not be afraid of being laughed at. "Rather a fool in the eyes of the world for the sake of God, than honoured and admired by the world". But we shall not be fools for the sake of our own inventions and ideas, but for the sake of God! We must not be the reason why people laugh at God!

[15] Published at Libris, 1989 (only in Swedish).

[16] "The Rationality of Scientific Discovery", *Philosophy of Science* (1974) **41**, page 124.

[17] Science in this context means the systematic striving to fully and completely explain mechanisms and origins of all observable phenomena in the physical world. Eastern "science" is perhaps better described as "engineering science". According to the Eastern worldview, logic can never give man access to the ultimately true nature of the world. A successful Hindu scientist therefore has to think according to the Western way as long as he is working in his laboratory.

[18] Exactly as in the introductory example of the archeologist, where -- if we want to give a complete explanation of the origin of the heat-pump -- we also must be able to explain the origin of the computerprogram that controls the industrial robot.

[19] The laws of physics speak of the physical world. The metalaws are on a higher level and speak of the laws of physics, e.g. "relativity theory is a consistent theory" -- cp. *metaphysics*.

[20] Quoted from *Science and Creation*, by John Polkinghorne, New Science Library, 1989 (page xiii).

[21] See footnote 3.

[22] A wise man once said, "As mankind withdraws from God, more and more progress is made in theology and science of religion".