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Why believe if only Science produces Knowledge?

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[The german heading is a play on words:
„Warum glauben, wenn doch die Wissenschaft Wissen schafft?“]

The situation

Many people think that there is no reason to have a religious belief or even a Christian credo, as we have science which explains the world and our lives. This is the widespread scientific naturalism and often atheism. There seem to be contradictions between the Christian and the scientific world view concerning creation vs. evolution or miracles. DAWKINS, e.g., wants to abandon all religions and argues for a militant New Atheism. STEPHEN HAWKING, the famous physicist who died in March, told us that there is simply no need for God as creator because our universe is supposed to have emerged out of nothing.

An Observation

But there is a notable observation: We find distinguished scientists with the same range of scientific knowledge and activity but considerably differing in their beliefs. There is RICHARD LEWONTIN, a famous molecular biologist, who is an atheist and writes that 'we cannot allow a Divine Foot in the door'. On the other side there is FRANCIS S. COLLINS, a neuro scientist and the former director of the 'Human Genome Project'. He is a Christian and says: 'I am a scientist and a believer, and I find no conflict between those world views.' You will find more examples.

This observation seems to be a strong hint that science is not able and not suited to force us to adopt one or the other world view or belief. Science seems to be 'underdetermined'. There are a lot of questions science cannot answer. We will later deal with some details of this topic. But first I want to tell a little story as a vivid example:

An Example

Imagine you see a fire at your neighbouring plot and you ask your neighbour: 'Why is this fire burning there?'

A first answer might be: 'The fire is burning because the carbon in the wood combines with oxygen in the air and forms carbon dioxide (CO₂).' You probably didn't expect this answer, but it is the correct scientific explanation. It is objective and everybody who knows a bit of chemistry or physics could give this answer, not only your neighbour.

A second answer might be: 'The fire is burning because I lighted a match and sparked the fire.' This answer is only partly scientific, but it gives the important information about the originator, the author of the fire. Only your neighbour can tell you this.

A third answer might be: ‘The fire is burning because I want to roast potatoes – or: because I like the heat, the warmth.’ This is probably the type of answer you expected to hear. It is not scientific, it is subjective and gives you the purpose, the reason why there a fire is burning.

This simple story shows that science is not suited, not adequate to answer all questions we are interested in. It is not able to serve as a world view. The philosopher WITTGENSTEIN says in his Tractatus (6.52): ‘We feel that even if all possible scientific questions are answered, none of our life problems are touched.’ [“Wir fühlen, dass selbst, wenn alle wissenschaftlichen Fragen beantwortet sind, unsere Lebensprobleme noch gar nicht berührt sind.”]

The Threefold Access to Nature

I now want to go into some detail concerning the range and limitations of science. The way science accesses to nature is threefold or has three dimensions (G. HOLTON, W. KUHN):

1. There is experience, given by observation and experiment. This is the empirical dimension.
2. We set up theories, we develop models of objects and processes in nature. This is the analytical and mathematical dimension. Progress in science comes by the interplay of these two dimensions.
3. There is also a so called ‘thematic’ dimension (HOLTON) which cannot be deduced from the two other dimensions. It is the field of background beliefs of methodological or philosophical nature. Other people say ‘guiding principles’ or ‘prejudices’ (EINSTEIN) or paradigms. There are a lot of ‘thema’, often connected with the spirit of time (Zeitgeist).

I mention, e.g., the old philosophical prejudice that all movements in the sky must be circular. Extremely important for the understanding of science is the thema of ‘methodological atheism’ or ‘methodological naturalism’. That means that all metaphysical questions are excluded from the scientific method. The question for God is excluded – but not denied. And God mustn’t be used to fill gaps in an incomplete scientific theory. Methodological atheism is good practice for more than 400 years and helps to communicate among scientists having different philosophies and religions. But it is not correct to deduce a dogmatic atheism from this methodological atheism.

Limitations

I'd like to say a few more words about the second dimension dealing with scientific models and theories. Is it correct to speak of limitations? Isn't it only a question of time until all limitations are overcome?

Surely there is a great number of limitations that move or disappear with time. I call them 'relative'. The enormously growing power of computers, e.g., moves limitations of calculation and modelling. I experienced this in my own research. You will know other examples.

But there are several 'absolute' limitations deeply connected with methodological questions. They are not gaps which will close from time to time, they are fundamental limitations. I will only focus on the role of mathematics.

Mathematics

Scientists agree, at least all physicists, that mathematics is the optimal substrate for modelling what we observe in nature. It is extremely powerful. Natural laws are written in mathematical language. But why should something rational in mind fit to objects and processes in nature? It is often called a miracle that it is possible again and again to describe nature with the help of mathematics. The Nobel prize laureate WIGNER published a paper on the 'Unreasonable Effectiveness of Mathematics in the Natural Sciences' (1960). Here a Christian may realize the rationality of God the Creator and our having a part in it.

Mathematics is best suited to describe *how* objects are connected in space and time. *How* runs an outgoing wave? *How* quickly splits a cell? HOW-questions are answered. This is a lot, and is enough for engineers to do their work and also to take care of the creation. But there are some severe methodological limitations:

1. Physical theories in mathematical language relate objects in space and time. But they don't tell us about the nature of the objects. Ontological questions are unanswered: What is electrical charge? What is matter? From this it follows that materialism may not refer to physics as the physicists themselves are not able to say ultimately what matter is (MUTSCHLER).

Other What-is-questions are not answered as well.

2. With the help of mathematics regular events are described. There are also laws of chance for ensembles of events. There is only 'Chance and Necessity' as MONOD states. But singular events, even very rare events are not included in scientific theories.

3. Natural laws are valid, they hold. It follows that they do not give guidelines for what is good to do and what not. This is the old 'is-ought' problem (HUME). There is no way from an indicative to an imperative. Scientific theories cannot answer ethical or moral questions.
4. Scientific models cannot express goals, purposes, intentions in nature. What seems to be teleological in biology, e.g., is substituted by mechanisms, by causal processes. (I think that there are unanswered philosophical questions in biology.)
5. All technical artefacts made by engineers have a purpose, a function. This is not obvious from the scientific description – we must ask the engineer for that.
6. Not only purposes but also aesthetic statements cannot be found in science. Whether something is nice or inspiring or overwhelming cannot be stated within a scientific formalism.

Aspects

We now have seen in more detail what the 'underdetermination' of science means (Remember LEWONTIN vs. COLLINS). In other words:

Science describes nature only under a special perspective.

By no means is it a complete world view or an ideology that covers all our questions. Think of the story of the fire! The theologian HANS KESSLER says: 'The reality of the world in its totality is multidimensional and accessible only with a multi-perspective approach.' Other aspects are possible and indeed necessary to understand our world.

Basic questions

But what is the basis of the world in its totality? Is it matter? With a bottom-up approach? Is it God? With a top-down approach? As we have seen, science isn't able to answer these questions because of its methodological limitations. Neither a proof nor a denial of God is possible.

And there are also unanswered individual questions:

- What is the meaning of my life?
- What is my relation to other people?
- How can I deal with guilt?
- What happens after death?

It is notable that science sometimes puts questions that cannot be answered within its own method:

- Why is there something and not just nothing?

- Why is there order in nature and not chaos?
- Why are we able to understand all these regularities?
- Why is there a fine-tuning of the fundamental physical constants towards life in our universe?
- How did the world come into being?

Considering these questions science indeed may get some clues to an intelligent creator -- hints, signs, no proofs. Science has no idea who this creator might be. ALLAN R. SANDAGE (1926-2010), 'the grand old man of cosmology', became a Christian at the age of 50. In the context of fine-tuning arguments he states: 'The nature of God is not to be found within any part of the findings of science. For that one must turn to the scriptures.'

Let us follow this advice at the end of my talk. I read the beginning of the Letter to the Hebrews:

1,1 In the past God spoke to our ancestors through the prophets at many times and in various ways,

2 but in these last days he has spoken to us by his Son, whom he appointed heir of all things, and through whom also he made the universe.

3 The Son is the radiance of God's glory and the exact representation of his being, sustaining all things by his powerful word. After he had provided purification for sins, he sat down at the right hand of the Majesty in heaven. (NIV)

Here we find details on the nature of God: He is speaking, he shows himself in various ways and finally he shows himself in his son Jesus Christ. A scientist may find it helpful to think of Jesus Christ being a model of God. Jesus said: 'Anyone who has seen me has seen the Father.' (Gospel of John 14,9 NIV). A father expressing his love to us.

We considered the question 'Why believe if only Science produces Knowledge?' We have seen the power but also the fundamental limitations of the scientific method. It follows that you are free to find answers to your personal questions in the scriptures about God and his son Jesus Christ. I want to encourage you to do so. –

Thank you!