

Sverre Holm

The Imagined Conflict:

On Science and God

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Den innbilte konflikten. Om naturvitenskap og Gud

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About the author

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Holm has also worked in industry, including at GE Vingmed Ultrasound with development of instruments for ultrasound imaging of the heart, and at Sonitor Technologies, where he developed ultrasound-based indoor positioning. In 2002, he was elected as a member of the Norwegian Academy of Technological Sciences (NTVA).

Holm's research is concerned with how ultrasound waves are affected when they pass through the body. This is the topic of his book *Waves with Power-Law Attenuation* (Springer, 2019). He has had sabbaticals in the USA, France, and England. He is also in the panel for the popular science program *Abels Tårn* on NRK P2, where he has been about once per semester for many years.

Sverre Holm has been married for 43 years and has four children and four grandchildren. He has a blog with the same title as the book, <https://sverre-holm.blogspot.com/>, and is on Twitter as [@Sverre_Holm](https://twitter.com/Sverre_Holm).

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Foreword

Pope John Paul II is reported to have said that football is the most important of all unimportant things. While science may not be the most important of all *important* things, it is high on the list if we want to shape the future or understand the past.

At the same time, it's easy to get excited. As a science fiction fan, I have at times been so enthusiastic about science that in my teens it ended in tunnel vision. Everything that was wrong could be solved with more science. That we had not come any further was due to faith in God, the church and lack of knowledge - and these were connected.

There were two important reasons for this. One that I had too little knowledge of faith in God and church history, like the authors of the books I read about past scholars. The other is that I had not done science myself - just like the same authors.

Since then, I have become both a Christian and a Master of Engineering, both in adulthood. Inspired by this, I have written a lot about myths in popular science and textbooks in books such as *When the Earth Went Flat: The Myths That Would Not Die* (2010) and *Tricked by the Text? Mistakes and Confusion about Christianity in Teaching Materials* (2019).

In addition, I have written books on everything from the arguments for God to evolution, for young people and adults. Even if I have not done scientific research, I have long experience in researching popular science.

Thus, it is inspiring and instructive to read someone who knows real research - from the inside. Sverre Holm is a pilot who takes us through waters where there is no shortage of storms and reefs. Few have a better and broader background, even as a Christian. He has published a number of scientific articles. He knows how difficult it is to break thought patterns. He has experience in fighting his way through dead ends, strays and thinking traps, turning around and starting all over.

Not least, he knows how much of the groping and failure that in the light of hindsight can look strange: Everyone should understand this! The solution was totally obvious! He guessed right! Why was he not believed?

But in research, the solution is seldom obvious. On the contrary, the solution is sometimes the least obvious.

Sverre's background also opens up for a better understanding of the *world view and vision* of past researchers. Although we sometimes hear the opposite, many were strongly inspired by their faith in God. Copernicus, Galileo, Kepler, and Newton would have protested if they were told that faith in God hindered their research. Even Galileo would not have supported the modern claim that the church was opposed to science, even if it did not always listen to him.

If you are going to write about the history of science, it is tempting to lean towards popular science. But unfortunately, bestsellers can lead astray. We still find textbooks that say that Galileo could observe in the telescope that the earth revolved around the sun, or that it was only in the Enlightenment era that one began to look for causal explanations in nature, because then one had begun to believe in reason and not in God.

Sverre does instead what a researcher should do: He studies the data. What did the researchers of the past write and think themselves? What did they struggle to understand? Why did it take time? What prompted astronomer Kepler to pursue truth? What completely legitimate *scientific* objections

were there which made the claims of Copernicus and Galileo unacceptable for so long? Why did people think like they did about natural laws in Newton's time?

For there is little that is obvious in science and the history of science. Sometimes what we are completely sure of, even what we can see with our own eyes, is completely wrong. The sun does not go around the earth. Even the largest rocks can be moved by invisible forces at enormous distances. Atoms are not the smallest building blocks. In the Middle Ages, the earth was not thought to be flat.

It is best to get up from the armchair and look for yourself, whether it is in nature itself or in the texts of those who have researched it. Or you can do the next best thing: read this book. If you are interested in the researchers' science and beliefs, there is no better guide in Norway than Sverre Holm.

Bjørn Are Davidsen

Preface

There are constantly allegations in the media which are critical to the Christian faith and assume what I call an imaginary conflict between science and the Christian faith. It is my desire to help to reduce the number of such oversimplified claims and contribute to a more informed debate. Here I will point to an alternative which is more in line with the history of science in the last 400 years, where natural philosophers and scientists¹ with faith in God, like Kepler, Pascal, Newton, Leibniz, Maxwell, Kelvin, Waage and Lemaître, played key roles.

It is important for me to reach young people with what I write here, especially those with some academic interest. The book is a result of the response to lectures I have given to students over the years. When I now have an entire book at my disposal, I wish to give a broad and thorough justification for how classical Christian faith can go hand in hand with science. Some may be skeptical to that claim, while others may feel that it is unproblematic. Often the latter category cannot really justify why. This may especially be true when it comes to evolution and the creation of man. It should be acknowledged that there are several issues here which can be problematic to resolve. That is why my ambition to discuss this in detail and to suggest solutions.

The book is also intended as a contribution to get more young Christians to pursue a scientific career without the nagging fear that they may thereby compromise their faith. It also highlights that science has its limit. In the same manner that natural sciences cannot be used to "prove" the Christian faith, neither can it be used to defend materialism and atheism.

The book has three approaches to the subject. The first is historical. Here I want to clear up misunderstandings about the role of the Christian faith in the history of science. It will be evident that the Middle Ages laid the groundwork for today's science, before the science revolution, despite the belief of many that it was a Dark Age. History shows also how the concept of a «law of nature», which was fully introduced in the 17th century, in the beginning was unthinkable without a lawgiver. This link is almost completely gone in our time. The acceptance of Big Bang has also led to physics and cosmology being less in opposition to faith in a creator than before.

The second approach is scientific. An example is how new light is shed on the Galileo conflict when the limitations of the science of his time are appreciated. The book puts little emphasis on heroes of science and tries to avoid interpreting the science of the past only considering current theories, which is so easy for many scientists to do. Another example is how vague science is when it comes to the question of what constitutes human consciousness. Despite this, there is no lack of strong opinions on how man originated. But how can we know that when we do not even agree on what consciousness is?

The third approach is philosophical. The relationship between Big Bang and the need for a creator is partly a scientific question, but even more it is concerned with why something exists at all. Issues related to evolution are also often reduced to scientific questions. Here I would argue that the philosophical approach is more fruitful, as it helps to sort out what science says and what some naturalists may think it says. It can also provide better answers to difficult questions such as how randomness in evolution can be reconciled with God's providence. The same goes for the relationship to natural laws.

¹ The word scientist was first suggested in 1833. Before that scientists were called natural philosophers. The earliest scientists are therefore called natural philosophers in this book.

I have enjoyed many interesting discussions over the years. Special thanks go to Bjørn Are Davidsen, Bjørn Hinderaker and Thomas Holm who have commented on most of the chapters. The following people have also read through one or several chapters and provided comments that have helped to improve the book: Torleif Elgvin, Lise Holm, Daniel Joachim Kleiven, Arve Kråkenes, Ben David Normann, Frode Randgaard and Arnt Inge Vistnes. Thanks to Knut Hegna at the University Library at the University of Oslo, who made me aware of all the historical books that can be found in the university's collections. Thanks also to Katrine Masvie at the publisher Lunde / Veritas for valuable input and for improvements to many of my formulations. I also thank Dag-Askild Bleka for contributing to the final completion of the book. None of those mentioned here, are of course responsible for the content of any of the chapters.

Introduction

The Scientific Revolution outshines everything since the rise of Christianity and reduces the Renaissance and Reformation to the rank of mere episodes, mere internal displacements, within the system of medieval Christendom.

Herbert Butterfield, historian²

As the quote says, two major upheavals have left a strong mark on our culture, one attributed to Christianity and the other to science. Science came into being in what is called «early modern time », approx. 1500–1789. The beginning and end of this era are respectively the end of the Middle Ages and the French Revolution. Isaac Newton's major scientific work Principia was published in 1687, and it is common to think that with this a long process culminated where nature went from being a place where man looked for God's purposes, to become a kind of machine. The early natural philosophers nevertheless maintained that this mechanism was started by and run by God, who also had a purpose behind it. It was this belief in God which inspired them to believe in the possibility for, and the value of science.

Today, the picture seems to have been completely reversed. Instead of thinking that the Christian faith can stimulate scientific work, faith is perceived as an obstacle and something that over the years has opposed science. The success of science has also led to its thinking affecting almost all areas - and for many, science has become a kind of "theory of Everything" and a substitute for religious belief. Here I ask the question of how this happened, and whether this is not really an imaginary conflict.

God has arranged all things

The statement that "God has arranged all things by measure and number and weight"³ has long been an inspiration to me. It was quoted a lot in the Middle Ages⁴, and Professor of chemistry Peter Waage (1833–1900)⁵ at the University of Oslo seems to have had it as his motto. He is one of the originators of the only law of nature that Norwegian researchers have formulated, Guldberg and Waage's law of mass action from 1864.

In the ceiling of his office in Oslo he had painted "You have arranged all things by measure and number and weight", and in his textbook in chemistry from 1897 he quotes this when discussing how all chemical compounds have an unchanging, definite composition.⁶

I have been amazed at how much more the history of science is influenced by ideas from the Bible than I originally thought, as Waage's example shows. My contention is that the Bible's high position

² Quote from the introduction of (Butterfield, 1951).

³ From the Wisdom of Solomon 11.20. This book is one of the deuterocanonical books, which are writings from the time between the Old and New Testaments. Some consider them in line with the rest of the Bible, including the Catholic Church.

⁴ See p. 229 in (Jaki, 1988).

⁵ https://en.wikipedia.org/wiki/Peter_Waage

⁶ There is more about Waage in Chapter 5.

in European culture contributed to the fact that science became so highly developed here, even though the Bible is obviously not the cause alone.⁷

Some of the foremost natural philosophers and scientists have almost become friends during the writing process, and I look forward to introducing them here. You will be acquainted with, among others, Galileo Galilei, Blaise Pascal, Isaac Newton, William Buckland, James Maxwell, Lord Kelvin, Pierre Duhem and Albert Einstein. Most of them are Europeans, but we also visit Nilakantha Somayaji from India, the Persian Ibn Sahl and Chinese Zu Chongzhi as well. Some of the researchers also contributed to the philosophy of science, and there we find that both the experimental method and the concept of natural laws have justifications in theology.

Many books have been written about the alleged conflict between Christian faith and science, and both historians, theologians and philosophers have contributed. I write as an active researcher in physics, and I think this can provide a valuable and different perspective. Not the least when it comes to understanding how new scientific knowledge is found, and thus also how theories that look like good science for a period, still will not stand the test of time. Yet, with today's strong specialization in science, I am also aware of the limitations when entering areas that are different from my own. I am thinking in particular of the fields of evolution and consciousness, which today are so central in the relationship between God and science.

I also have had to enter fields such as history, philosophy, and theology. It is then relevant how historians criticize a special type of historical writing: "The Enlightenment historians did not judge historical phenomena based on the phenomena themselves, but on their own rationalist scale. In particular, the judgement of the church suffered from this perspective", writes the historian Kjeldstadli.⁸ I have therefore tried here to understand the past on its own terms. It is not only negative to use the present to understand the past, but I try to avoid it, because such a history of science easily leads us to distinguish between heroes who stood on the "right side" and others who did not.⁹ Such a choice of perspective can sometimes be crucial, for example, in understanding Galileo. Since it later turned out that he was right, it is easy to make him a larger hero than he really was, and it is often done, not the least by scientists when writing science history. Here I therefore strive to understand science from the point of view of the time when it happened, and to a lesser extent from what we consider important science in retrospect.

Of course, my selection from the history of science is not comprehensive. I have deliberately chosen fields which are most often associated with conflict, such as astronomy, cosmology, paleontology, and evolution. This means that important areas such as medicine and chemistry are hardly mentioned. It is inevitable that such choices must be made in a writing process. My starting point is that the conflict between science and God has been made into something much bigger than it really is. This is not really about apologetics, but about finding back to the constructive interaction that mostly has been there.

There is a great need to point this out. Recently, a Norwegian high school textbook reported that Galileo turned his telescope toward the sky, and that he could thus "observe that Copernicus'

⁷ Other factors may be a favorable climate, well-developed agriculture that could feed many, Latin as a common language due to the church, but still a lack of centralization, and thus competition between the many states.

⁸ See p. 57 in (Kjeldstadli, 1999).

⁹ This is called "presentism", and the historian (Butterfield, 1931) was one of the earliest critics of interpreting history in the light of the present.

theories were correct."¹⁰ Even then, both he and others knew that observing planets was not enough to establish this as fact, one had to observe stars. Galileo is also described as one who was "a role model who was always willing to reformulate his hypotheses and assumptions if observations and experiments did not support them." It is possible that the author is influenced by Einstein, who called Galileo "the father of modern science", when he here creates his own Galileo.¹¹ The real Galileo, who failed to report observations of double stars that were unfavorable to his own hypothesis, does not support the image of Galileo as a role model. There are unfortunately many such idyllic examples that promote an imaginary conflict perspective in Norwegian textbooks.¹² In this book I will therefore deliberately avoid terms such as "the father of science" or the "first scientist", as such easily lead to unrealistic hero stories.

Another example is from the King's Mirror.¹³ This philosophical and pedagogical work from the middle of the 13th century is considered the most important literary work of the Norwegian Middle Ages. It contains several examples of the thinking of the time about science, and I will give examples of that in chapters 3 and 5. In an introductory essay to the Norwegian edition published in 2000, a contrived conflict is presented which is about the division of the spherical Earth from Antiquity in five belts or zones. Since it was too cold all the way north and south, and probably too hot around the equator, only the two temperate zones were considered habitable, one in the north and one in the south. The northern zone includes Europe, Asia, and the Mediterranean. It is true that the church, as the best science of the time suggested, doubted that there were humans in the southern temperate belt¹⁴, when it was considered impossible to cross the hot area around the equator. The King's Mirror only comments in a matter-of-fact way that "if people live as close to the cold zone on the south side as the Greenlanders live near the north, then I certainly think that the north wind comes as warm to them as the south wind to us". In the introductory essay it is claimed that "here the author [of the King's Mirror] promotes dangerous thoughts", and that "in the early 14th century Peter of Abano, professor of medicine in Padua, and Cecco da Ascoli, astronomer in Bologna, were burned by the Inquisition for having claimed that such a humanity existed »".¹⁵

Renowned historians of science, on the other hand, say that no scientist ever lost his life because of scientific views.¹⁶ This needs clarification. It turns out that Peter (or Pietro) d'Abano, who was also an astrologer, was charged with fraud, heresy, and magical arts, but acquitted. He was nevertheless charged again and sentenced after his death, but not burned. The astrologer, not the astronomer, Cecco d'Ascoli was first warned after setting the horoscope of Jesus Christ and claiming that the fate of the Son of God was determined by the stars and not by God.¹⁷ When he would not let go of his claim, he was later judged and burned for heresy. Closer examination thus shows that neither of the two cases had anything to do with science, and that the conflict is constructed. Today, of course, we think these judgments are unheard of, but they can be easier to understand if we compare the views

¹⁰ Pp. 182–184 in (Madsen, Killerud, Roaldset, Hansen, & Sæther, 2013).

¹¹ See p. 271 in (Einstein, 1954)

¹² See the website <http://www.fagsjekk.no> for more examples and (Davidsen, 2010), (Davidsen, 2019).

¹³ Konungs skuggsjá in old Norse, https://en.wikipedia.org/wiki/Konungs_skuggsj%C3%A1

¹⁴ This applies to areas such as South Africa, Australia and Argentina, unknown to Europeans at this time.

¹⁵ See p. XXXI in (Bagge, 2000).

¹⁶ See the first page of the introduction to (Lindberg & Numbers, 2003).

¹⁷ These accounts are presented without reference to any source in Andrew Dickson White's "The Warfare of Science with Theology" (1896) and are mentioned on page 59 of (Kretschmer, 1889), so they go far back in time.

of theology of that time with how we view the practice of medicine today. We are quick to crack down on quackery if someone without a formal education tries to practice medicine.¹⁸

There is a great deal of interdisciplinarity behind a book project like this. Interdisciplinarity was something the Austrian physicist Erwin Schrödinger encouraged. He received the Nobel Prize in 1933 for important work in quantum mechanics but had far-reaching interests beyond his own field. In the preface to a book that would later inspire molecular biology, he comments on the expectation he met that he should not write about anything other than exactly what he was an expert on. At the same time, he observes that everyone has a desire for universal and all-encompassing knowledge. This is also the essence of the word university¹⁹ which originally means a whole, as we see in the words universal and universe. To avoid fragmentation of knowledge, someone must therefore dare to integrate facts and theories from many areas. This applies even if we only have second-hand and incomplete knowledge, and at the risk of making fools of ourselves, says Schrödinger.²⁰ And that is the chance I am taking here.

I've always had an urge to figure out how things work. It started with the opening of clocks, radios and motors and then putting them back together without too many superfluous parts. I grew up with neighbors who all worked at the research institutes at Kjeller north of Oslo. The residential area where I lived my first 18 years had as the address Research Park, and already in junior high school I was determined to study engineering at NTNU (NTH) in Trondheim. This led me to what I have been working on almost all my life, namely, to figure out how to improve stuff - whether it is to produce better images of the earth from a satellite or when looking into the human body. At the same time, curiosity has been there to understand both how and why things work. What is the physics going on as ultrasound waves enter the body, interact with cells and tissues, are reflected, and can be used to create images that provide medical diagnoses?²¹

Gradually, an aspect of science that we do not talk much about, engaged me more and more. This is the creative and wondrous side which has something that borders on the mysterious about it. It is common to emphasize the rational methods we have for testing ideas and hypotheses about science. It can make science seem dry, rule-based and a bit boring. But science also requires "creative imagination, great skill, and presupposes in-depth knowledge of the knowledge that already exists to come up with new hypotheses".²² Einstein also mentions that there is no logical way to formulate the laws of nature, "only intuition".²³ When it comes to art and other "creative" professions, this is one of the first things that comes to mind, but intuition is just as much an aspect of science.²⁴

¹⁸ See point 23, p. 271 in (Davidsen, 2010) and pp. 119–123 in (Hannam, 2011). On the page <https://jameshannam.com/conflict.htm> Hannam discusses Abano and d'Ascoli. He has also written a thesis on this topic, (Hannam, 2003).

¹⁹ The Latin phrase "universitas magistrorum et scholarium" - community of masters and scholars - is the background for the word university.

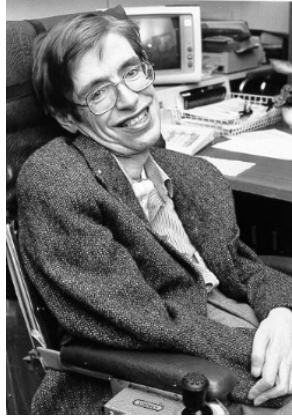
²⁰ From the introduction to (Schrödinger, 1944).

²¹ This eventually became a book, see (Holm, 2019).

²² See p. 37 in (Wormnæs, 1987).

²³ See p. 226 in (Einstein, 1954).

²⁴ One of the few to discuss this is (McLeish, 2019), who compares creativity in science and in art.



Figur 1. Stephen Hawking (1942–2018), British theoretical physicist and author (NASA/Wikipedia).

The big questions

One aspect of the creative is the ability to ask questions that can be so complicated that we cannot expect to find answers. But the fact that we ask these questions at all shows something of our humanity and God-given curiosity. Stephen Hawking, for example, wondered what it is that "breathes fire into the equations and makes a universe for them [the equations] to describe."²⁵ Fire gives associations to the four elements of antiquity: water, earth, air, and fire. Fire cleanses slag from liquid iron, and if we get too close, it becomes dangerous, but fire also has to do with the life-giving sun. The equations come to life, but how and why? Hawking and I build on a whole series of natural scientists who have gone before us. We are toddlers who stand on the "shoulders of giants". Newton is usually associated with this expression, but he took it from Bernard de Chartres who in the 12th century showed his enthusiasm for the ancient Greeks.

Another of these giants was the Hungarian American Nobel Prize winner Eugene Wigner. In 1960 he wondered about "the appropriateness of the language of mathematics for the formulation of the laws of physics," and went on to say that this is "a miracle and a wonderful gift, which we neither understand nor deserve."²⁶ Why are there laws of nature? They cannot in themselves be scientifically justified but are something we must assume or believe. And what is it that makes equations, which express abstract ideas in our minds, work so well to express how a concrete nature works? Is it not strange that Wigner received a Nobel Prize for a work that was based on a tool he did not understand, and which he considered a miracle?

Albert Einstein thought something similar when he said that "the eternal mystery of the world is that it is comprehensible", and that "the fact that it is comprehensible is a miracle".²⁷ Like Wigner, Einstein's theory of relativity is also based on a mystery and a miracle. Einstein connects it to man and points out that it is just as if our intellect is made for finding out about the world we live in.

Barrow and Tipler also wonder about the laws of nature, but just as much about the natural constants that are part of them. They say that "as yet, we have no explanation for the precise numerical values taken by these unchanging dimensionless numbers". An example is Newton's law of gravity, where the gravitational constant is such a number. If it had been much weaker, we would probably have had a new world record in high jump, but the sun would also have had to be much bigger in order not to collapse. Such a sun would not have emitted life-giving light and heat, but radio waves that



Figur 2. Albert Einstein on a cruise on the Oslo fjord in 1920 with the geologists Heinrich Goldsmith (left) and Jakob Schetelig (right). Photo: Halvor Rosendahl, University of Oslo.

²⁵ This phrase is from Hawking's bestseller, (Hawking, 1988).

²⁶ The quote is from an amusing article from 1960 that even has its own page on Wikipedia, (Wigner, 1990).

²⁷ The quotations are from pp. 292-293 in (Einstein, 1954) and are often abbreviated to "the most incomprehensible thing about the world is that it is comprehensible at all", which is one of Einstein's most famous statements.

are too weak to keep life going.²⁸ Barrow and Tipler go on to say that «the fortuitous nature of many of their numerical values is a mystery that cries out for a solution».²⁹

The existence of life in our universe is another mystery that no one can explain. Thus, there are at least three great unsolved, and perhaps even unsolvable, scientific mysteries: how the world came into being, how life began, and how our consciousness came into being, the very consciousness that makes us think about these questions at all.

The most fundamental question was probably asked by the German philosopher and mathematician Gottfried Leibniz around 1714, when he wondered why there is something rather than nothing.³⁰ This question goes far beyond technology, physics and biology to creation and God.

This book continues in Chapter 1 with the image of God's two books. These are the two revelations in nature and in the Bible. This is an idea that has roots far back. Chapter 2 is about creation and how good, beautiful, and surprising it is. Here I could have chosen many different aspects of creation, but I start with topics that I have had to deal with in my own research, namely the fantastic quality man has as a verbal communicator. Chapter 3 is about the alleged role of the church in having suppressed science throughout history. This is very much about trying to understand the Middle Ages in its own light and not as a "dark" derailment on the way to our own "enlightened" era. I also delve into the conflict around 17th century Galileo Galilei and why Tycho Brahe's³¹ model of the solar system for a long time was considered the best. Chapter 4 is about how both life and the universe began. A new understanding of fossils from the end of the 18th century led to a complete reassessment of the age of the earth and of life. Eventually, the idea emerged that life is neither eternal, as the Greeks believed, or was created in a few days. On the other hand, life has both a beginning and a long history, and different life forms are connected. In addition, the start of the universe with the Big Bang was established as good science.

The last half of the book is about evolution and human uniqueness, and especially consciousness. Here it is important to have a basis in philosophy of science, and chapter 5 is about that and especially the limits of science. Chapter 6 on evolution first deals with what is not part of the theory of evolution, contrary to the belief of many, such as the origin of life. I go through philosophical arguments to highlight the difference between evolution as a science and as a world view, but also some scientific arguments. Chapter 7 is about what a human being is and how humans are unique in nature. I was particularly surprised at how vague science is when it comes to what human consciousness really is. How can we know how something came into being when we do not even agree on what it is? I end in Chapter 8 by discussing where the conflict myth comes from. Today, Christians should be challenged to find positive sides even in postmodernism, even though it has a concept of relative truth that may seem to go against both natural science and the Bible's relationship to truth. I end with some thoughts on artificial intelligence and super-intelligence. Here the contrast between the biblical view of man as created in the image of God and the view of mankind of scientism provides a valuable corrective.

This book can be read in several ways. Chapters 3–8 are largely based on what I have written in Chapter 2 about our place in space and about cosmic evolution. There I lay out the big picture and show the wonderful it is how Big Bang 14 billion years ago led to intelligent man. Chapter 3 deals

²⁸ See p. 106 in (Lewis & Barnes, 2016).

²⁹ See chapter 2.1 in (Barrow & Tipler, 1986).

³⁰ The question - and the answer - is in paragraphs 7-8 of "The Principles of Nature and Grace, Based on Reason," 1714.

³¹ His Danish name is Tyge Ottesen Brahe.

with astronomy in Galileo's time and is the most demanding chapter in terms of science. Although it is central, some parts can be skipped. The philosophy of science in Chapter 5 is a necessary backdrop for understanding what I write about evolution in Chapters 6 and 7, and these three chapters should preferably be read together.

The last section in some of the chapters (3, 4, 6 and 7) contains reflections on how the ideas presented interact with the Bible. It may be helpful to read Chapter 1 along with these four sections to form a holistic view of how the Bible and science can be understood together.

References

- Bagge, S. (2000). Innledende Essay. I: Kongespeilet. In: Oslo, De norske Bokklubbene.
- Barrow, J., & Tipler, F. (1986). *The cosmological anthropic principle*: Oxford: Oxford University Press.
- Butterfield, H. (1931). *The Whig Interpretation of History*. London: Bell.
- Butterfield, H. (1951). *The Origins of Modern Science: 1300-1800*: Macmillan.
- Daidsen, B. A. (2010). *Da jorden ble flat: Mytene som ikke ville dø*. Oslo: Luther.
- Daidsen, B. A. (2019). *Lurt av læreboken? Feil og forvirring om kristen tro i læremidlene*. Oslo: Veritas forlag.
- Einstein, A. (1954). Ideas and opinions. In C. B. Seelig, Sonja (Ed.). New York: Crown Publishers.
- Hannam, J. (2003). *Church Discipline of Natural Philosophers in the Middle Ages: the Case of Cecco D'Ascoli*. (MSc). University of London, Retrieved from <https://jameshannam.com/Church%20Discipline%20of%20Natural%20Philosophers%20in%20the%20Middle%20Ages.pdf>
- Hannam, J. (2011). *The genesis of science: How the Christian Middle Ages launched the scientific revolution*. Washington DC: Regnery Publishing.
- Hawking, S. (1988). *A Brief History of Time*: Bantam Dell Publishing Group.
- Holm, S. (2019). *Waves with Power-Law Attenuation*. Switzerland: Springer.
- Jaki, S. L. (1988). *The Savior of science*. Washington DC: Gateway Books.
- Kjeldstadli, K. (1999). *Fortida er ikke hva den en gang var: en innføring i historiefaget*: Universitetsforl.
- Kretschmer, K. (1889). *Einleitung in die Geschichte der physischen Erdkunde im Christlichen Mittelalter*: Eduard Hölzel.
- Lewis, G. F., & Barnes, L. A. (2016). *A fortunate universe: Life in a finely tuned cosmos*: Cambridge University Press.
- Lindberg, D. C., & Numbers, R. L. (2003). *When science and Christianity meet*: University of Chicago Press.
- Madsen, P., Killerud, I., Roaldset, H., Hansen, A., & Sæther, E. (2013). Perspektiver. Historie Vg2 og Vg3. In: Oslo: Gyldendal undervisning.
- McLeish, T. (2019). *The poetry and music of science: Comparing creativity in science and art*: Oxford University Press.
- Schrödinger, E. (1944). *What is life? The physical aspect of the living cell and mind*: Cambridge University Press Cambridge.
- Wigner, E. P. (1990). The unreasonable effectiveness of mathematics in the natural sciences. In *Mathematics and Science* (pp. 291-306): World Scientific.
- Wormnæs, O. (1987). *Vitenskapsfilosofi* (2. utg. ed.). Oslo: Gyldendal.