

A Christian View of Science
MVOPC Adult Sunday School Class, 2022
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Lesson 3: Two Reformations

“. . . we behold the agreement that is between the present Design of the Royal Society, and that of our Church in its beginning. They both may lay equal claim to the word Reformation, the one having compass'd it in Religion, the other purposing it in Philosophy. They both have taken a like cours[e] to bring this about; each of them passing by the corrupt Copies, and referring themselves to the perfect Originals for their instruction; the one to the Scripture, the other to the large volume of the Creatures.”

Thomas Sprat, *History of the Royal Society*, 1667

In the last class, we looked at how the great ancient cultures, including ancient Greece, failed to give birth to a self-sustaining scientific enterprise, because their worldviews did not provide the necessary foundation for a rational, systematic study of the natural world. Modern science arose once in history, during the sixteenth and seventeenth centuries in Christian Europe. But if Christianity was one of the causes of modern science, why did it have to wait nearly 1500 years to get off the ground?

I. The History of Biblical Interpretation

What do we mean by interpretation?

Acts 8:30-31: So Philip ran to him and heard him reading Isaiah the prophet and asked, “Do you understand what you are reading?” And he said, “How can I, unless someone guides me?” And he invited Philip to come up and sit with him.

Nehemiah 8:2, 8: So Ezra the priest brought the Law before the assembly, both men and women and all who could understand what they heard, on the first day of the seventh month. . . . They read from the book, from the Law of God, clearly, and they gave the sense, so that the people understood the reading.

Interpretation bridges the gap between the text and the reader: it is the art and science of getting the message across.

Interpretation is a matter of life and death:

- 1) Pharisees: believed in inspiration of the OT, but added written and oral traditions. Jesus said they nullified the Word of God by their traditions. Then they crucified the promised Messiah.
- 2) The Roman Catholic Church: Bible and The Church – church authority *determines* the meaning of God’s Word.

In the early church, a system of interpretation emerged that enumerated four senses of the text, one historical, and three spiritual (Origen – 3; Augustine – 4)

- 1) Literal – fundamental; basic
- 2) Allegorical – objects in Scripture are symbolic of spiritual realities
- 3) Tropological – the moral sense; relation to *me*
- 4) Anagogical – the future/eternal meaning

Every text has all four meanings. Furthermore, the allegorical sense multiplied meanings because the objects referred to by the words could themselves refer to multiple spiritual realities. Meanings are therefore multiplied *ad infinitum*. This gives free rein to unlimited fantasy with the text. *A text that can mean anything effectively means nothing. This is why the Middle Ages were such a dark time.*

The heart of the Protestant Reformation was its doctrine of Scripture: WCF I:9 - 9. "The infallible rule of interpretation of Scripture is the Scripture itself: and therefore, when there is a question about the true and full sense of any Scripture (*which is not manifold, but one*), it must be searched and known by other places that speak more clearly."

II. The Bible & Natural Science in the Middle Ages

Christianity arose out of the ruins of skepticism of classical culture to become the dominant intellectual framework of Europe. Of course, it was Roman Christianity, so it was Roman/Christian view of nature that determined the European view of nature during the Middle Ages.

Hugh of St. Victor, *De tribus diebus*: "For the whole sensible world is like a kind of book written by the finger of God – that is, created by some divine power – and each particular creature is somewhat like a figure, not invented by human decision, but instituted by the divine will to manifest the invisible things of God's wisdom. But in the same way that some illiterate, if he saw an open book, would notice the figures, but would not comprehend the letters, so the stupid and 'animal man' who 'does not perceive the things of God', may see the outward appearance of these visible creatures, but does not understand the reason within."

For 1500 years, the study of the natural world took place within the humanities, as part of an overall science of interpretation that embraced words and things: "natural philosophy".

Animals have a story, they have meanings: they are symbols of important moral and theological truths. They are to be thought of as the hieroglyphics of Egypt: characters of an intelligible language. God infused the world with symbols.

Just as each text in the Bible was attributed a higher, spiritual or allegorical meaning than the literal words of the text, so objects in the physical world were understood to be symbols of higher, spiritual realities.

It is also this idea that underlay the medieval belief that there are two books: nature and Scripture. This is why natural philosophy is part of the humanities.

This approach to both world and text derives ultimately from Origen: "I think that He who made all things in wisdom so created all the species of visible things upon the earth, that He placed in some of them some teaching and knowledge of things invisible and heavenly, whereby the human mind might mount to spiritual understanding and seek the grounds of things in heaven." (Commentary on the Song of Songs)

Though Origen's theology was viewed with suspicion (he was condemned as a heretic at the Council of Constantinople in 553 for teaching the preexistence of souls and universal salvation,) his interpretive principles dominated the Middle Ages. So influential was he that over 1000 years later Dante was still using an interpretive scheme that was essentially the same.

Origen, *Commentary on the Song of Songs*: "Paul the apostle teaches us that the invisible things of God are understood by means of the things that are visible, and that the things that are not seen are beheld through their relationship and likeness to things seen. He thus shows that this visible world teaches us about that which is invisible, and that this earthly scene contains certain patterns of things heavenly. Thus it is to be possible for us to mount up from things below to things above, and to perceive and understand from the things we see on earth the things that belong to heaven. On the pattern of these the Creator gave to His creatures on earth a certain likeness to these, so that thus their great diversity might be more easily deduced and understood."

Origen, Commentary on the Song of Songs: “Each of the manifest things is to be related to one of those that are hidden . . . all things visible have some invisible likeness and pattern.”

We’ve already seen some examples of the early Church’s interpretation applied to Scripture. How did it work out in the interpretation of nature?

(1) Hexameral literature (moral truths)

Basil’s Hexameron: “. . . all poisonous animals are accepted for the representation of the wicked and contrary powers.”

Augustine, Confessions: birds → believers who had been given instruction in the Christian faith and could soar to the heavens

Ambrose, Hexameron: Do not be bent over like cattle; dogs bark in defense of their masters → be ready to defend Christ’s flock.

(2) The allegorical reading of nature was most concisely compiled in a short book written by a contemporary and possible disciple of Origen, the Physiologus. It is a comprehensive work on the allegorical interpretation of animals, plants and stones. It was enormously influential in the Middle Ages: “Perhaps no book except the Bible has ever been so widely diffused among so many people and for so many centuries as the Physiologus.” – E. P. Evans. It is full of different legends from a variety of sources.

The Serpent: “. . . when he grows old, his eyes become dim and, if he wants to become new again, he abstains and fasts for forty days until his skin becomes loosened from his flesh. And if it does become loosened from fasting, he goes and finds a narrow crack in the rock, and entering it he bruises himself and contracts and throws off his old skin and becomes new again. We, too, throw off for Christ the old man and his clothing through much abstinence and tribulation. And you, seek out Christ the spiritual rock and the narrow crack. ‘The gate is narrow and there is tribulation on the way which leads towards life, and few are those who enter through it.’”

The Pelican: “If the Pelican brings forth young and the little ones grow, they take to striking their parents in the face. The parents, however, hitting back kill their young ones and then, moved by compassion, they weep over them for three days, lamenting over those whom they killed. On the third day, their mother strikes her side and spills her own blood over their dead bodies . . . and the blood itself awakens them from death.”

The result of all this is that features of the physical world are not important for how they work or how they interact causally, but for what they signify. The physical objects were completely obscured by the symbolic meanings given to them.

Tertullian famously commented on the Father of Greek philosophy, Thales of Miletus, who fell headlong into a well because he was looking up at the stars: It was “a figurative picture of philosophers” who “indulge a stupid curiosity on natural objects, which they ought rather (intelligently to direct) to their Creator and Governor.”

Augustine, commenting on the account of the Pelican in the Physiologus, said it was “perhaps true, perhaps not,” but what was important was not the literal truth, but the spiritual significance. Commenting on some outrageous trait he attributed to the eagle, he remarks that the reader should not worry about the accuracy of the report, but rather its symbolic significance.

In his Confessions, speaking of the curiosity to attain knowledge, which he calls a “vain and curious desire, veiled under the title of knowledge and learning” he says: “From this disease of curiosity are all those strange sights exhibited in the theater. Hence men go to search out the hidden powers of nature (which is besides our end), which to know profits not, and wherein men desire nothing but to know.”

So an interest in nature was at best futile: If the real meaning were in the spiritual significations, what good would it do to try to figure out physical meanings of the symbols? They could only be unintelligible. At worst this interest was idolatrous.

III: The Discovery of Nature

In the 12th century, a shift in understanding began to emerge. For the first time, the word “universe” began to become common in discussing created reality. The significance of this is that it reveals a new awareness of the wholeness of physical reality.

Up to this time, physical objects were seen strictly as relating to spiritual realities. Now, while retaining the spiritual significance, there was an additional relatedness to other things. The meaning of an individual object could only be understood as it related to the whole – its context, relations to other objects, patterns, organization, etc.

So a horizontal dimension of relations is added to the vertical relations.

This new dimension fostered a new emphasis on nature as a book: nature was to be studied and explained. Second, nature was another source of revelation. It became another authority alongside Scripture, and study of it took on a religious significance.

Furthermore, it began to be seen that understanding nature could restore knowledge and mastery of creation lost at the fall. The relations existing in God’s mind could be mirrored in human minds.

So whereas for Augustine, redemption implied distancing ones self from physical reality, in the 12th century understanding nature began to be seen as part of the restoring process of redemption. The restoration was accomplished by becoming like God: in wisdom, knowing and understanding the world; in power, controlling and subduing it.

IV: The Two Reformations

So with all these necessary elements, why did it have to wait almost 400 years for Copernicus to come along?

The newfound conception of and interest in nature was not pursued by direct empirical engagement with nature, but was developed along the lines of ancient texts. Nature for medieval scholars was found in books.

If from time to time they add one or two of their own observations, they still saw their main task as transmitting the world that had already been closely observed in the past.

Many of the creatures described in the ancient bestiaries were fantastic creatures, like the centaur and the winged horse. But what was important was not whether they existed in nature but whether they existed in books. Few mythical creatures meet with any skepticism in the medieval writings.

The mastery of nature aimed at was the reconstruction of the ancient body of knowledge from the Golden Age. Why go to all the trouble of observation when someone smarter than me has already done it?

All scholastic learning, theology, math, medicine, natural philosophy, history, was dominated by the two principles of reason and authority. “Authority” included not only the ancient Church Fathers, but also Galen, Aristotle, etc. It was this unquestioned authority of the ancients that set the limits of legitimate inquiry, e.g., Galileo.

What happens when authorities contradict each other? Textual criticism sorts out errors and which authorities are more reliable in each instance. E.g., according to Pliny, the elephant lives 200-300 years, but this was reduced to 120, which was Aristotle’s figure. Questions were settled by appeal to other texts, not appeal to nature.

In the 16th century a new challenge arose: the voyages of discovery. When all of nature was a fixed set of creatures, each of which was known to the ancients and each of which had its own familiar symbolic significance handed down from the ancients, it was easy to take these significations for granted. A host of hitherto unknown animals, plants and stones which lacked all the familiar associations, literary allusions, and symbolic meanings, confronted scholars with the possibility that perhaps all these meanings were not natural, God-given functions of the objects but were merely conventionally and arbitrarily assigned them by human beings.

The logical end of this movement is the total rejection of allegory, the idea that things have meaning. This did not happen in the 16th century, but some critical humanists began to question the symbolic functions of natural objects. Thomas Browne asked how the pelican can serve as a symbol of Christ if it does not actually exhibit the behaviors on which the symbolism exists? If looked at in nature, the account of the pelican is simply false.

On August 16, 1513, a young Martin Luther began the first of a year long series of lectures on the Psalms. He had instructed the University printer to prepare a text of the Psalter in which the large margins were left blank for students to write down their own comments and observations. In the medieval schools, these margins would have ordinarily been filled with the glosses and commentaries of the church fathers, the *Glossa Ordinaria* [see picture]. The text of the Scripture was conceptually inseparable from the official interpretation of the church. This step was of monumental importance: Luther was separating the authority of Scripture from the tradition of the church. The insistence on the Scripture alone as the ultimate court of appeals was the foundation of the Protestant Reformation.

Council of Trent (1546): “No one, relying on his own skill, shall . . . wresting the sacred scripture to his own sense, presume to interpret the said sacred scripture contrary to that sense which holy mother Church, - whose it is to judge the true sense and interpretation of the holy Scriptures, - hath held and doth hold; or even contrary to the unanimous consent of the Fathers.”

This explains the violence with which the Roman church prosecuted those who translated the Bible into the vernacular languages of the people. It broke the stranglehold which the Roman Church held over European religion. For the reformers, the authority of the church derives from the Scripture, and not vice versa. An enraged Pope Paul V, in 1606, told the Venetian ambassador, “Do you not know that so much reading of Scripture ruins the Catholic religion?”

When the Reformation freed people from ancient authority to make determinations for themselves about God’s Word in Scripture, at the same time it opened the door for them to make their own determinations about nature apart from the approval of approved authorities.

It is difficult to overestimate the way in which the medieval universities were dominated by the opinions of ancient authors, in addition to the Roman church. In 1559 the English physician John Geynes was excluded from the Royal College for suggesting that Galen might not be infallible. He was not allowed in until he signed a recantation. Up until the 1630s professors could be penalized for contradicting Aristotle.

Finally, the Protestant insistence on the literal meaning of Scripture as opposed to the allegorical meaning had unintended consequences for how nature was interpreted. After all, the allegorical method was based on the assumption that physical objects represented other things. The insistence on literal interpretation entailed a new, non-symbolic conception of nature. The void left by the removal of this kind of intelligibility from physical objects was replaced by a new kind of intelligibility, what we would call scientific: objects are related mathematically, mechanically, and causally.

Contemporary scholars were fully aware of the parallels between the “Two Reformations”:

Luther argued that the universities, “where only that blind, heathen teacher Aristotle rules” needed “a good, thorough reformation.”

Francis Bacon wrote in 1605 that “in the age of ourselves and our Fathers, when it pleased God to call the Church of Rome to account for their degenerate manners and ceremonies, and sundry doctrines obnoxious and framed to uphold the same abuses; at one and the same time it was ordained by the Divine Providence, that there should attend withal a renovation and a new spring of all other knowledges.”

Johannes Kepler called himself “the Luther of astrology”.

In 1655 Thomas Culpeper wrote that the two reformations could only be accomplished when the “pope in philosophy” (Aristotle) was dethroned along with the other Pope.

Presbyterian Thomas Hall, in a petition to Parliament for the reformation of the universities called it “this last peece of Reformation.”

John Webster wrote “Neither is it fit that Authority (whether of Aristotle or any other) should inchain us . . . so there may be a Philosophical liberty to be bound to the authority of none, but truth itself.”

In Thomas Sprat’s *History of the Royal Society*, he wrote that “. . . we behold the agreement that is between the present Design of the Royal Society, and that of our Church in its beginning. They both may lay equal claim to the word Reformation, the one having compass’d it in Religion, the other purposing it in Philosophy. They both have taken a like cours[e] to bring this about; each of them passing by the corrupt Copies, and referring themselves to the perfect Originals for their instruction; the one to the Scripture, the other to the large volume of the Creatures.”

Main Theme: The intellectual transformations that constituted the Protestant Reformation provided the parallel transformations that were necessary for the birth of science: a rejection of allegorical interpretations of both nature and Scripture; the need to go to the sources themselves to obtain information; the rejection of ancient authorities if their opinions could not be justified from the “originals” themselves, nature and Scripture. It was not until the Protestant Reformation insisted on taking the Bible seriously that anyone began to take nature seriously.

Specific Answer: For 1500 years in Europe people used Christian ideas mingled with non-Christian philosophy, and the result was disastrous for science. Not until Christians started taking the Bible seriously, and rejected non-Christian thought, was science able to get going. The Scientific Revolution was contemporaneous with the Protestant Reformation for a reason: the same idea of immediate and direct reliance on God’s revelation itself, Scripture on the one hand and Nature on the other, was indispensable for the birth of science. The early scientists and the Reformers were well aware of this connection.