

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

THE WARFARE OF SCIENCE WITH THEOLOGY.

CHAPTER I.

FROM CREATION TO EVOLUTION.

I. THE VISIBLE UNIVERSE.

AMONG those masses of cathedral sculpture which preserve so much of mediæval theology, one frequently recurring group is noteworthy for its presentment of a time-honoured doctrine regarding the origin of the universe.

The Almighty, in human form, sits benignly, making the sun, moon, and stars, and hanging them from the solid firmament which supports the "heaven above" and overarches the "earth beneath."

The furrows of thought on the Creator's brow show that in this work he is obliged to contrive; the knotted muscles upon his arms show that he is obliged to toil; naturally, then, the sculptors and painters of the mediæval and early modern period frequently represented him as the writers whose conceptions they embodied had done—as, on the seventh day, weary after thought and toil, enjoying well-earned repose and the plaudits of the hosts of heaven.

In these thought-fossils of the cathedrals, and in other revelations of the same idea through sculpture, painting, glass-staining, mosaic work, and engraving, during the Middle Ages and the two centuries following, culminated a belief which had been developed through thousands of years, and which has determined the world's thought until our own time.

Its beginnings lie far back in human history; we find

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

them among the early records of nearly all the great civilizations, and they hold a most prominent place in the various sacred books of the world. In nearly all of them is revealed the conception of a Creator of whom man is an imperfect image, and who literally and directly created the visible universe with his hands and fingers.

Among these theories, of especial interest to us are those which controlled theological thought in Chaldea. The Assyrian inscriptions which have been recently recovered and given to the English-speaking peoples by Layard, George Smith, Sayce, and others, show that in the ancient religions of Chaldea and Babylonia there was elaborated a narrative of the creation which, in its most important features, must have been the source of that in our own sacred books. It has now become perfectly clear that from the same sources which inspired the accounts of the creation of the universe among the Chaldeo-Babylonian, the Assyrian, the Phœnician, and other ancient civilizations came the ideas which hold so prominent a place in the sacred books of the Hebrews. In the two accounts imperfectly fused together in Genesis, and also in the account of which we have indications in the book of Job and in the Proverbs, there is presented, often with the greatest sublimity, the same early conception of the Creator and of the creation—the conception, so natural in the childhood of civilization, of a Creator who is an enlarged human being working literally with his own hands, and of a creation which is “the work of his fingers.” To supplement this view there was developed the belief in this Creator as one who, having

. . . “from his ample palm
Launched forth the rolling planets into space,”

sits on high, enthroned “upon the circle of the heavens,” perpetually controlling and directing them.

From this idea of creation was evolved in time a somewhat nobler view. Ancient thinkers, and especially, as is now found, in Egypt, suggested that the main agency in creation was not the hands and fingers of the Creator, but his *voice*. Hence was mingled with the earlier, cruder belief regarding the origin of the earth and heavenly bodies by the Almighty the more impressive idea that “he spake

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

and they were made"—that they were brought into existence by his *word*.*

Among the early fathers of the Church this general view of creation became fundamental; they impressed upon Christendom more and more strongly the belief that the universe was created in a perfectly literal sense by the hands or voice of God. Here and there sundry theologians of larger mind attempted to give a more spiritual view regarding some parts of the creative work, and of these were St. Gregory of Nyssa and St. Augustine. Ready as they were to accept the literal text of Scripture, they revolted against the conception of an actual creation of the universe by the hands and fingers of a Supreme Being, and in this they were followed by Bede and a few others; but the more material conceptions prevailed, and we find these taking shape not only in the sculptures and mosaics and stained glass of cathedrals, and in the illuminations of missals and psalters, but later, at the close of the Middle Ages, in the pictured Bibles and in general literature.

Into the Anglo-Saxon mind this ancient material conception of the creation was riveted by two poets whose works

* Among the many mediæval representations of the creation of the universe, I especially recall from personal observation those sculptured above the portals of the cathedrals of Freiburg and Upsala, the paintings on the walls of the Campo Santo at Pisa, and, most striking of all, the mosaics of the Cathedral of Monreale and those in the Cappella Palatina at Palermo. Among peculiarities showing the simplicity of the earlier conception the representation of the repose of the Almighty on the seventh day is very striking. He is shown as seated in almost the exact attitude of the "Weary Mercury" of classic sculpture—bent, and with a very marked expression of fatigue upon his countenance and in the whole disposition of his body.

The Monreale mosaics are pictured in the great work of Gravina, and the Pisa frescoes in Didron's *Iconographie*, Paris, 1843, p. 598. For an exact statement of the resemblances which have settled the question among the most eminent scholars in favour of the derivation of the Hebrew cosmogony from that of Assyria, see Jensen, *Die Kosmologie der Babylonier*, Strassburg, 1890, pp. 304, 306; also Franz Lukas, *Die Grundbegriffe in den Kosmographien der alten Völker*, Leipsic, 1893, pp. 35–46; also George Smith's *Chaldean Genesis*, especially the German translation with additions by Delitzsch, Leipsic, 1876, and Schrader, *Die Keilinschriften und das Alte Testament*, Giessen, 1883, pp. 1–54, etc. See also Renan, *Histoire du peuple d'Israël*, vol. i, chap. i, *L'antique influence babylonienne*. For Egyptian views regarding creation, and especially for the transition from the idea of creation by the hands and fingers of the Creator to creation by his *voice* and his "word," see Maspero and Sayce, *The Dawn of Civilization*, pp. 145–146.

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

4

FROM CREATION TO EVOLUTION.

appealed especially to the deeper religious feelings. In the seventh century Cædmon paraphrased the account given in Genesis, bringing out this material conception in the most literal form; and a thousand years later Milton developed out of the various statements in the Old Testament, mingled with a theology regarding “the creative Word” which had been drawn from the New, his description of the creation by the second person in the Trinity, than which nothing could be more literal and material:

“He took the golden compasses, prepared
In God’s eternal store, to circumscribe
This universe and all created things.
One foot he centred, and the other turned
Round through the vast profundity obscure,
And said, ‘Thus far extend, thus far thy bounds:
This be thy just circumference, O world!’” *

So much for the orthodox view of the *manner* of creation.

The next point developed in this theologic evolution had reference to the *matter* of which the universe was made, and it was decided by an overwhelming majority that no material substance existed before the creation of the material universe—that “God created everything out of nothing.” Some venturesome thinkers, basing their reasoning upon the first verses of Genesis, hinted at a different view—namely, that the mass, “without form and void,” existed before the universe; but this doctrine was soon swept out of sight. The vast majority of the fathers were explicit on this point. Tertullian especially was very severe against those who took any other view than that generally accepted as orthodox: he declared that, if there had been any pre-existing matter out of which the world was formed, Scripture would have mentioned it; that by not mentioning it God has given us a clear proof that there was no such thing; and, after a manner not unknown in other theological controversies, he threatens Hermogenes, who takes the opposite view, with

* For Gregory of Nyssa, Augustine, and the general subject of the development of an evolution theory among the Greeks, see the excellent work by Dr. Osborn, *From the Greeks to Darwin*, pp. 33 and following; for Cædmon, see any edition—I have used Bouterwek’s, Gütersloh, 1854; for Milton, see *Paradise Lost*, book vii, lines 225–231.

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

“the woe which impends on all who add to or take away from the written word.”

St. Augustine, who showed signs of a belief in a pre-existence of matter, made his peace with the prevailing belief by the simple reasoning that, “although the world has been made of some material, that very same material must have been made out of nothing.”

In the wake of these great men the universal Church steadily followed. The Fourth Lateran Council declared that God created everything out of nothing; and at the present hour the vast majority of the faithful—whether Catholic or Protestant—are taught the same doctrine; on this point the syllabus of Pius IX and the Westminster Catechism fully agree.*

Having thus disposed of the manner and matter of creation, the next subject taken up by theologians was the *time* required for the great work.

Here came a difficulty. The first of the two accounts given in Genesis extended the creative operation through six days, each of an evening and a morning, with much explicit detail regarding the progress made in each. But the second account spoke of “*the day*” in which “the Lord God made the earth and the heavens.” The explicitness of the first account and its naturalness to the minds of the great mass of early theologians gave it at first a decided advantage; but Jewish thinkers, like Philo, and Christian thinkers, like Origen, forming higher conceptions of the Creator and his work, were not content with this, and by them was launched upon the troubled sea of Christian theology the idea that the creation was instantaneous, this idea being strengthened not only by the second of the Genesis legends, but by the great text, “He spake, and it was done; he commanded, and it stood fast”—or, as it appears in the Vulgate and in most translations, “He spake, and they were made; he commanded, and they were created.”

* For Tertullian, see *Tertullian against Hermogenes*, chaps. xx and xxii; for St. Augustine regarding “creation from nothing,” see the *De Genesi contra Manichæos*, lib. i, cap. vi; for St. Ambrose, see the *Hexameron*, lib. i, cap. iv; for the decree of the Fourth Lateran Council, and the view received in the Church to-day, see the article *Creation* in Addis and Arnold’s *Catholic Dictionary*.

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

As a result, it began to be held that the safe and proper course was to believe literally *both* statements; that in some mysterious manner God created the universe in six days, and yet brought it all into existence in a moment. In spite of the outcries of sundry great theologians, like Ephrem Syrus, that the universe was created in exactly six days of twenty-four hours each, this compromise was promoted by St. Athanasius and St. Basil in the East, and by St. Augustine and St. Hilary in the West.

Serious difficulties were found in reconciling these two views, which to the natural mind seem absolutely contradictory; but by ingenious manipulation of texts, by dexterous play upon phrases, and by the abundant use of metaphysics to dissolve away facts, a reconciliation was effected, and men came at least to believe that they believed in a creation of the universe instantaneous and at the same time extended through six days.*

Some of the efforts to reconcile these two accounts were so fruitful as to deserve especial record. The fathers, Eastern and Western, developed out of the double account in Genesis, and the indications in the Psalms, the Proverbs, and the book of Job, a vast mass of sacred science bearing upon this point. As regards the whole work of creation, stress was laid upon certain occult powers in numerals. Philo Judæus, while believing in an instantaneous creation, had also declared that the world was created in six days because "of all numbers six is the most productive"; he had explained the creation of the heavenly bodies on the fourth day by "the harmony of the number four"; of the animals on the fifth day by the five senses; of man on the sixth day by the same virtues in the number six which had caused it to be set as a limit to the creative work; and, greatest of all, the rest on the seventh day by the vast mass of mysterious virtues in the number seven.

St. Jerome held that the reason why God did not pronounce the work of the second day "good" is to be found

* For Origen, see his *Contra Celsum*, cap. xxxvi, xxxvii; also his *De Principiis*, cap. v; for St. Augustine, see his *De Genesi contra Manichæos* and *De Genesi ad Litteram, passim*; for Athanasius, see his *Discourses against the Arians*, ii, 48, 49.

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

THE VISIBLE UNIVERSE.

7

in the fact that there is something essentially evil in the number two, and this was echoed centuries afterward, afar off in Britain, by Bede.

St. Augustine brought this view to bear upon the Church in the following statement: "There are three classes of numbers—the more than perfect, the perfect, and the less than perfect, according as the sum of them is greater than, equal to, or less than the original number. Six is the first perfect number: wherefore we must not say that six is a perfect number because God finished all his works in six days, but that God finished all his works in six days because six is a perfect number."

Reasoning of this sort echoed along through the mediæval Church until a year after the discovery of America, when the *Nuremberg Chronicle* re-echoed it as follows: "The creation of things is explained by the number six, the parts of which, one, two, and three, assume the form of a triangle."

This view of the creation of the universe as instantaneous and also as in six days, each made up of an evening and a morning, became virtually universal. Peter Lombard and Hugo of St. Victor, authorities of vast weight, gave it their sanction in the twelfth century, and impressed it for ages upon the mind of the Church.

Both these lines of speculation—as to the creation of everything out of nothing, and the reconciling of the instantaneous creation of the universe with its creation in six days—were still further developed by other great thinkers of the Middle Ages.

St. Hilary of Poitiers reconciled the two conceptions as follows: "For, although according to Moses there is an appearance of regular order in the fixing of the firmament, the laying bare of the dry land, the gathering together of the waters, the formation of the heavenly bodies, and the arising of living things from land and water, yet the creation of the heavens, earth, and other elements is seen to be the work of a single moment."

St. Thomas Aquinas drew from St. Augustine a subtle distinction which for ages eased the difficulties in the case: he taught in effect that God created the substance of things

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

in a moment, but gave to the work of separating, shaping, and adorning this creation, six days.*

The early reformers accepted and developed the same view, and Luther especially showed himself equal to the occasion. With his usual boldness he declared, first, that Moses “spoke properly and plainly, and neither allegorically nor figuratively,” and that therefore “the world with all creatures was created in six days.” And he then goes on to show how, by a great miracle, the whole creation was also instantaneous.

Melanchthon also insisted that the universe was created out of nothing and in a mysterious way, both in an instant and in six days, citing the text: “He spake, and they were made.”

Calvin opposed the idea of an instantaneous creation, and laid especial stress on the creation in six days: having called attention to the fact that the biblical chronology shows the world to be not quite six thousand years old and that it is now near its end, he says that “creation was extended through six days that it might not be tedious for us to occupy the whole of life in the consideration of it.”

Peter Martyr clinched the matter by declaring: “So important is it to comprehend the work of creation that we see the creed of the Church take this as its starting point. Were this article taken away there would be no original sin, the promise of Christ would become void, and all the vital force of our religion would be destroyed.” The Westminster divines in drawing up their Confession of Faith

* For Philo Judæus, see his *Creation of the World*, chap. iii; for St. Augustine on the powers of numbers in creation, see his *De Genesi ad Litteram*, iv, chap. ii; for Peter Lombard, see the *Sententiæ*, lib. ii, dist. xv, 5; and for Hugo of St. Victor, see *De Sacramentis*, lib. i, pars i; also, *Annotat. Elucidat. in Pentateuchum*, cap. v, vi, vii; for St. Hilary, see *De Trinitate*, lib. xii; for St. Thomas Aquinas, see his *Summa Theologica*, quest. lxxxiv, arts. i and ii; the passage in the *Nuremberg Chronicle*, 1493, is in fol. iii; for Bossuet, see his *Discours sur l'Histoire Universelle*; for the sacredness of the number seven among the Babylonians, see especially Schrader, *Die Keilinschriften und das Alte Testament*, pp. 21, 22; also George Smith *et al.*; for general ideas on the occult powers of various numbers, especially the number seven, and the influence of these ideas on theology and science, see my chapter on astronomy. As to mediæval ideas on the same subject, see Detzel, *Christliche Ikonographie*, Freiburg, 1894, pp. 44 and following.

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

specially laid it down as necessary to believe that all things visible and invisible were created not only out of nothing but in exactly six days.

Nor were the Roman divines less strenuous than the Protestant reformers regarding the necessity of holding closely to the so-called Mosaic account of creation. As late as the middle of the eighteenth century, when Buffon attempted to state simple geological truths, the theological faculty of the Sorbonne forced him to make and to publish a most ignominious recantation which ended with these words: "I abandon everything in my book respecting the formation of the earth, and generally all which may be contrary to the narrative of Moses."

Theologians, having thus settled the manner of the creation, the matter used in it, and the time required for it, now exerted themselves to fix its *date*.

The long series of efforts by the greatest minds in the Church, from Eusebius to Archbishop Usher, to settle this point are presented in another chapter. Suffice it here that the general conclusion arrived at by an overwhelming majority of the most competent students of the biblical accounts was that the date of creation was, in round numbers, four thousand years before our era; and in the seventeenth century, in his great work, Dr. John Lightfoot, Vice-Chancellor of the University of Cambridge, and one of the most eminent Hebrew scholars of his time, declared, as the result of his most profound and exhaustive study of the Scriptures, that "heaven and earth, centre and circumference, were created all together, in the same instant, and clouds full of water," and that "this work took place and man was created by the Trinity on October 23, 4004 B. C., at nine o'clock in the morning."

Here was, indeed, a triumph of Lactantius's method, the result of hundreds of years of biblical study and theological thought since Bede in the eighth century, and Vincent of Beauvais in the thirteenth, had declared that creation must have taken place in the spring. Yet, alas! within two centuries after Lightfoot's great biblical demonstration as to the exact hour of creation, it was discovered that at that hour an exceedingly cultivated people, enjoying all the

Cambridge University Press

978-1-108-00009-3 - A History of the Warfare of Science with Theology in Christendom, Volume 1

Andrew Dickson White

Excerpt

[More information](#)

fruits of a highly developed civilization, had long been swarming in the great cities of Egypt, and that other nations hardly less advanced had at that time reached a high development in Asia.*

But, strange as it may seem, even after theologians had thus settled the manner of creation, the matter employed in it, the time required for it, and the exact date of it, there remained virtually unsettled the first and greatest question of all; and this was nothing less than the question, WHO actually created the universe?

Various theories more or less nebulous, but all centred in texts of Scripture, had swept through the mind of the Church. By some theologians it was held virtually that the actual creative agent was the third person of the Trinity, who, in the opening words of our sublime creation poem, "moved upon the face of the waters." By others it was held that the actual Creator was the second person of the Trinity, in behalf of whose agency many texts were cited from the New Testament. Others held that the actual Creator was the first person, and this view was embodied in the two great formulas known as the Apostles' and Nicene Creeds, which explicitly assigned the work to "God the Father Almighty, Maker of heaven and earth." Others, finding a deep meaning in the words "Let *us* make," ascribed in Genesis to the Creator, held that the entire Trinity directly created all things; and still others, by curious metaphysical processes, seemed to arrive at the idea that peculiar combinations of two persons of the Trinity achieved the creation.

In all this there would seem to be considerable courage

* For Luther, see his *Commentary on Genesis*, 1545, introduction, and his comments on chap. i, verse 12; the quotations from Luther's commentary are taken mainly from the translation by Henry Cole, D.D., Edinburgh, 1858; for Melancthon, see *Loci Theologici*, in Melancthon, *Opera*, ed. Bretschneider, vol. xxi, pp. 269, 270, also pp. 637, 638—in quoting the text (Ps. xxiii, 9) I have used, as does Melancthon himself, the form of the Vulgate; for the citations from Calvin, see his *Commentary on Genesis* (*Opera omnia*, Amsterdam, 1671, tom. i, cap. ii, p. 8); also in the *Institutes*, Allen's translation, London, 1838, vol. i, chap. xv, pp. 126, 127; for Peter Martyr, see his *Commentary on Genesis*, cited by Zöckler, vol. i, p. 690; for the articles in the Westminster Confession of Faith, see chap. iv; for Buffon's recantation, see Lyell, *Principles of Geology*, chap. iii, p. 57. For Light-foot's declaration, see his works, edited by Pitman, London, 1822.