The Phenomenon of Cosmological Ideas in Early American Puritan Philosophy

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The purpose of this article is to offer a specific perspective on Puritan philosophy. Most of the early American philosophy of the Puritans dealt with theological issues, the main topics of philosophical speculation were the ideas of God, salvation, freedom, and others. However, there were some ideas, the presence of which is an important factor, which until now has been little taken into account. This factor is the genuine interest of the Puritans in the natural sciences. Both in England and in America, there were favorable conditions for the new natural philosophy proclaimed by Francis Bacon, this natural philosophy offered a new type of thought. The English philosopher struggled with obstacles in the way of research, one of which was infallible authority, for example, the authority of Aristotle. One of the most curious facts about the colonial life of American settlers is the construction of Harvard College, which from the first days, preserved and increased knowledge. Among the sciences taught was astronomy, which indicates the interest of the Puritans in the study of space. The most important change in the scientific worldview of the times of the first colonies in North America was the adoption of the heliocentric system of Nicolaus Copernicus to replace the geocentric system of Ptolemy, which had existed for many centuries. Among the first books printed in the colonies were mainly religious texts, but there were also scientific ones, for example, astronomical almanacs and catalogs appeared. The information in these books helped in observing the heavenly bodies, for which the first optical instruments, telescopes, were used. Several decades after the first settlers in Plymouth, the first telescope appeared in America thanks to John Winthrop Jr. Taken together, these facts show that in addition to religious reflections, American Puritan thinkers were also interested in cosmological problems.

Keywords: American philosophy, early American philosophy, Puritan philosophy, Puritans, Cosmology.

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Introduction

To consider the phenomenon of cosmological ideas in the early American philosophy of the Puritans, it is necessary to begin by emphasizing the contradictory views on the origin of the term "Puritans." The origin of this term, as well as its semantic load, is a topic for a separate discussion. In this study, Puritanism in general and Puritans, in particular, are considered in a comprehensive manner. Unlike other Protestant currents, Puritanism did not receive institutional development but acquired defining features. In his book *Puritanism: A Very Short Introduction* (2009), Francis J. Bremer argues that opponents of the Puritans themselves originally used the term "Puritan": "Among the most fundamental yet disputed aspects of the subject is the definition of puritanism... It was a movement defined in part by the selfidentification of men and women who referred to themselves as 'godly' or 'professors' and partly by their enemies, who scorned them as 'precisians,' and 'hypocrites.' The actual label 'puritan' was originally a term of opprobrium used by their enemies, though eventually adopted by the members of the movement" (Bremer, 2003: 2).

Common to the Puritans was strictness in life and faith; this was manifested in strict rigorism and special ethics. The way of life was directly related to their vocation, his profession, which was likened to serving God, determined a person. Hard work, determination, and thrift were considered virtues, and the minimum set of needs reached asceticism. In such conditions, special values arose, for example, chastity and strict morals were extolled, which in turn led to many prohibitions and fading aesthetic forms. Spiritual qualities were considered beautiful, important, and interesting, but not worldly ones. That is why the attitude of the Puritans to the world is mainly understood through the prism of these ideological guidelines, for quite a long time in the humanities it was believed that the world for the Puritans was nothing more than the scene of the biblical story. However, it would be a mistake to assume that all Puritans thought this way, because they did the attempts to explore the world, as natural philosophers did.

The amalgamation of rigorism and natural philosophy in the worldview of American Puritans

In order to understand how the worldview of the Puritans, devout Christians who sought to purify their faith, way of life, and thoughts, were able to accept the cosmological ideas of natural philosophy, it is necessary to define the very term "Puritans." The introduction argues that the term is polysemic and controversial, too complex to be definitively defined. Probably, such attempts are meaningless, in the sense that this concept, albeit contradictory, has existed in the narrative for four centuries and successfully defines a special historical phenomenon. Christopher Durston and Jacqueline Eales, in *Introduction: The Puritan Ethos, 1560–1700* (1996), describe this problem in more detail: "Attempts to define early-modern English 'puritanism' and to agree on a common usage for the noun and adjective 'puritan' have been going on for well over 400 years. Contemporaries set about the task almost as soon as the religious phenomenon made its appearance in the wake of the sixteenth-century Reformation crisis, and historians and other scholars have continued their efforts, generating a lively academic controversy which shows no sign of abating. The central reason why the debate has gone on for so long is that it has proved exceptionally difficult to reach any common ground" (Durston & Eales, 1996: 1).

It is important to emphasize the difference between astronomy and cosmology, for example, astronomy deals with the experimental study of cosmic phenomena, while

cosmology has a transdisciplinary character, it borders on both astronomy and philosophy. In more detail about the nature of philosophical cosmology, researchers Oleg Bazaluk and Larysa Kharchenko described in their article *The Philosophy of the Cosmos as the New Universal Philosophical Teaching about Being* (2018). "The cosmos in the philosophical understanding is the absolute One10 that is much wider than the scientific understanding of the cosmos as the Universe. In the cosmos as the One, the idea 'Those Who Transform the Universe' is already present as the cause of all that is happening in the world. The cosmos as the One is the absolute unity of the human ontology (Intelligent Matter) and any other state of matter in the ontology of the cosmos" (Bazaluk & Kharchenko, 2018: 11). If this definition is used as a methodological setting, it will allow studying the astronomical views of the Puritans as part of the philosophical heritage.

Puritans were distinguished by piety, courage, perseverance, confidence in their exclusivity, asceticism, and prudence in economic matters. Julie Spraggon in *Puritan Iconoclasm during the English Civil War* (2003) describes the particular aesthetic of the Puritans, which largely determined their way of thinking: "The Puritan aesthetic valued plainness and simplicity over ornament and luxuriousness, the aural over the visual, and discipline and a literal adherence to biblical injunctions over the wanderings of the human imagination" (Spraggon, 2003: XIV-XV). Another important feature was inherent in the Puritan temperament: "…the importance of zeal and of the willingness to act upon ones godly duty, and the desire to cleanse and purge all that was ungodly from both the church and society at large" (Spraggon, 2003: XV). Minimalism in aesthetics often leads to scrupulousness in the search for the essence; the thought of the puritan was not distracted by the temporal but turned to the eternal. This feature, in turn, influenced the interest of Puritan thinkers in astronomy and cosmological ideas.

The well-known German sociologist, historian, and philosopher Max Weber (1864-1920), in his famous book *The Protestant Ethic and the Spirit of Capitalism* (*Die protestantische Ethik und der "Geist" des Kapitalismus*, 1905), notes that Protestants were the holders of capital. A feature in the Protestant ethic justified the possibility of getting rich. The philosopher notes that the Reformation was accepted mainly by rich and economically developed countries. The reason for this, according to Max Weber, lies in a special worldview, which contributes to the greater economic rationalism of the Protestants. In addition, this is a very important aspect, since the key word here is not "economic", but "rationalism." While the Catholics were rather indifferent to earthly goods, in the Protestants asceticism was bizarrely combined with wealth. "We thus take as our starting-point in the investigation of the Relationship between the old Protestant ethic and the spirit of capitalism the works of Calvin, of Calvinism, and the other Puritan sects" (Weber, 1930: 89). Speaking of capitalism, Max Weber defines it in terms of the principle "time is money", which goes back to Benjamin Franklin (1706-1790). Despite the fact that Benjamin Franklin was not a puritan, in his own words, he was a deist; the ideas of the importance of Christian ethics and the natural picture of the world were successfully combined in the views of the educator. In his view, the world was like a mechanism, all the elements in it are like gears in a watch, and God is like a master who launched this amazing mechanism. "God was now the great clockmaker, His creation hugely complex in structure, but intelligible simply as matter in motion" (Hoskin, 2003). This picture of the world was not new in America; there were similar ideas in the 17th century.

Dorothy Stimson, in *Puritanism and the New Philosophy in 17th Century England* (1935), argues that the natural sciences were more than characteristic of the Puritan type of thinking and that the philosophy of the New Age was of interest to various thinkers both in England

and in America. "In 1600 England showed little indication that modem experimental science was already under way. By 1687 Harvey, Boyle, Halley, Christopher Wren, Hooke and a great group of less well-known workers had already advanced far along that path and Newton's Principia was on the printing presses, thanks to the urgency of his less able but deeply appreciative friends" (Stimson, 1935: 321).

The era of the reign of Queen Elizabeth is remembered for the expansion of trade and commerce. This, in turn, contributed to the enrichment of the elites, who were interested in popularizing education. Enlightenment ideas determined the future direction of the development of education. Sir Walter Mildmay (1523-1589), who was a Puritan, founded Emmanuel College, Cambridge in 1585. One notable alumni of the college is John Harvard (1607–1638), after whom a college in America would be named. The voyages of sailors began to give way to the migration of settlers, and the stimulus of new opportunities in the new world stirred the minds of the people. At this time, the philosophy of Giordano Bruno (1548–1600) about the plurality of worlds encouraged to dream of other planets. "Robert Recorde had discoursed upon the Copernican theory even before Elizabeth came to the throne, and Thomas Digges and his followers were giving publicity to the Copernican system and to the idea of an infinite universe years before Gilbert gave to both his conspicuous support? Wilkins writing in 1638 was illustrating his little book with Galileo's pictures of the moon and was bolstering up his defence of the Copernican theory against the denunciation of the Church with many a reference to Kepler, Descartes, Mersenne and other Europeans absorbed in the problems of the new science…" (Stimson, 1935: 322).

The current scientific belief that the Puritans were predominantly bigots and radically devout people is a hasty generalization. Most Puritans were educated at the University of Cambridge, and in founding Harvard College in New England, they drew heavily on the Cambridge tradition. There are examples in history of astronomical and cosmological ideas being accepted by Puritan thinkers. Harvard's first president, Henry Dunster (1609 (baptized)–1658), wanted to create an institution similar to Eton College and Cambridge University. At that time, astronomy was studied at Harvard according to Ptolemy's theory of a flat Earth and celestial spheres along which celestial bodies move. However, gradually, advanced discoveries in astronomy penetrated Harvard, and as one of the most famous historians of this institution, Samuel Eliot Morison, states in the first volume of *Harvard in the Seventeenth Century* (1936): "Astronomy, the fourth part of the medieval Quadrivium, was the only subject in which the College made some contribution toward the advancement of learning, in the seventeenth century" (Morison, 1936: 214).

In his *The first Americans, 1607-1690* (1927), Thomas Jefferson Wertenbaker (1927) describes how Henry Dunster organized the first courses at Harvard: "The course of study included logic, physics, ethics, geometry, astronomy, Greek, Hebrew, rhetoric and Latin… It is improbable that these high standards were rigidly adhered to, and we know that the attempt to compel conversation in Latin among the students failed. About 1670 Copernican astronomy, it appears, was getting a little foothold in Harvard, a century after its promulgation in Europe, but it was not formally taught until much later" (Wertenbaker, 1927: 248). Henry Dunster continued to teach the geocentric system, but it is known that Harvard also knew about the heliocentric system. "Although Henry Dunster, who became the first president of Harvard College in 1640, taught the Ptolemaic cosmology from Johannes Magirus' *Physiologia peripatetica*, Brigden's essay implies that the Copernican hypothesis was being taught at Harvard prior to 1659" (Yeomans, 1977: 415).

The German natural philosopher Johannes Magirus (1560-1596) wrote an Aristotelian treatise in 1597 entitled *Physiologiae Peripateticae libri sex* (1597). This treatise was used at Harvard to educate students on the cutting edge of science. The text of the treatise describes the teachings of Aristotle about four causes, mentions the ancient Greek philosophers Anaxagoras, Empedocles, there are references to Plato's texts, including the *Timaeus* dialogue. The treatise describes the celestial spheres, on which the heavenly bodies are placed, with the center – the Earth.

A big problem for the natural philosophers of the 16th and 17th centuries was the undisputed authority of Aristotle, whose teaching had a tremendous impact on the minds of European philosophers. If Aristotle believed that the movement in a circle is an ideal movement, since it has neither beginning nor end, then the orbits of the planets must also be circular. And even when empirically, thanks to astronomical observations, it became known that the orbits had a different shape – the shape of an ellipse, astronomers and cosmologists continued to defend circular motions, introducing complex systems of epicycles.

American Puritan Cosmological Concepts and Copernican Astronomy

Probably, Thomas Harriot made the first recorded astronomical observation in North America in 1585. This attempt was made during Virginia colonization. This astronomical observation made little scientific sense and was associated with a solar eclipse. The mathematician tried to connect two facts, namely, the death of the local population and an astronomical phenomenon. In the process of acculturation, the settlers were acquainted with the wisdom of the indigenous population of America; it can be assumed that there was some exchange of worldview guidelines. Although the missionaries sought to bring the Christian faith and Christian worldviews, ethnocentric and mythological pictures of the cosmos would later complement Western scholarship (Rudenko & Sobolievskyi, 2020). Therefore, for example, modern ecosophy and ethnocentrism are relevant largely due to the influence of the wisdom and philosophy of the indigenous people.

In essence, these cosmological reflections have the character of astrological conclusions. Nathaniel Mather (1630-1697) was born in England, as the second son of Richard Mather (1596-1669). In 1635, his father took him to New England for several years; he graduated M.A. at Harvard College in 1647, and then went back to England. He is the author of *The Righteousness of God through Faith* (1694). In a letter to his brother Increase Mather (1639-1723) he wrote: "…and all the priviledges and spirituall mercyes that in New England you enjoye. But I fear they are not long lived. The method of these, & the last years Theses is in my judgment better than an[y] I have seen formerly. But the grammar of some of [them] might bee mended, *e.g*., in Thes. 2… it should have been *producant,* not *producerent; &* I think some of the others arc paradoxical!, *e.g.* Thes. 11, & 22 Phys., to say nothing of Thes. 21. But I perceive the Cartesian philosophy begins to obteyn in New England, & if I conjecture aright the Copernican System too" (Massachusetts Historical Society, 1868: 63).

Copernican cosmology was not popular, however, was often preached by Puritan thinkers that God at the center of the world created the Earth; nevertheless, it was taught at Harvard. The proof that the Puritans in New England were studying the new cosmology is the astronomical almanacs. "Astronomical knowledge found its way to the people at large mostly through the almanacs, which in this period were still mere slender compilations of tables, with none of the literary embellishments which were to make them an element of popular culture a generation later" (Adams, 1927: 124).

One of the earliest known evidence of the American Pilgrims' interest in cosmological problems may be the surviving copy of *An Almanack of the Cœlestial Motions for This Present Year of the Christian Aera 1659: Being (in Our Account) Bissextile or Leap-Year and from the Creation (According to Truest Computation) 5608: Whose Vulgar Notes Are Golden Number 7 Cycle of the Sun 16 the Epact 17 Dominical Letter B: Fitted to 315 Degrees of Longitude the (Supposed) Meridian of the Massachusets Bay Where the Pole Artique Is Elevated 42 Gr and 30 Min and May Without Any Sensible Errour Be Applyed to Any Part of New-England* (1659). This long title contains the geographical coordinates of Massachusetts, which indicates the possibility of using the information from this almanac by skywatchers in New England. This book describes astronomical events, but not only the content is important, but also the style of presentation of thought. This style indicates an attempt to look at the world from the outside, as a modern scientist does, who builds an unbiased relationship with the subject of research. This special style is felt in some accents, such as instead of mentioning the name of the Earth, the text refers to the planet on which we all live. "There will be four Eclipse this year. Twice shall this Planet whereon we live, and it's concomitant the Moon, widow each other of their Sun-derived luster. The two of which Eclipses, by reason of the infra-terranean fire of the Luminaries will disappear in our Hemisphere" (Brigden, 1659: 1). The text details astronomical events, such as the appearance of the star Aldebaran, the brightest star in the constellation Taurus, or the appearance of the constellation Orion. The last pages of the Almanac contain a description of the system of the world. The author describes the Sun in the center of the Universe; he claims that thanks to the telescope, the rotation of the star around its axis along sunspots was established. He goes on to describe a system of planets where the closest planets to the Sun, Mercury, and Venus, follow in front of the earth. This is due to the peculiarities of observation, these planets are always visible near the Sun, respectively, and their orbits should be closer and smaller. The planets Mars, Jupiter, and Saturn, known at that time, remain beyond the orbit of the earth. "This is the true and genuine System of the World" (Brigden, 1659: 22). This Almanac is perhaps one of the earliest astronomical tests used by Puritan thinkers in New England.

The Puritan minister Samuel Danforth (1626-1674) is remembered for his interest in astronomy, he published three almanacs (for 1647, 1648, 1649), which are the earliest surviving American examples of the form. He also authored *An Astronomical Description of the Late Comet* (1665), this book is sometimes called the first astronomical in America. Samuel Morison, in his article *The Harvard School of Astronomy in the Seventeenth Century* (1934), confirms the fact that astronomy and cosmology were important disciplines in New England: "The Puritan clergy, instead of opposing the acceptance of the Copernican theory, were the chief patrons and promoter of the new astronomy, and of other scientific discoveries, in New England" (Morison, 1934: 13). Dorothy Stimson is of the same opinion: "It is small wonder that the keenly intellectual leaders in the Puritan world, men willing to sacrifice much for their religious and political beliefs, men like John Winthrop the younger, Robert Boyle and Christian Huygens, were glad to join in this fascinating pursuit and to feel that their days were not unprofitably spent even with all the press of other cares upon them. That experimental science spread as rapidly as it did in seventeenth-century England seems to me to be in part at least because the moderate Puritans encouraged it" (Stimson, 1935: 334).

The Modern age is called Modern since it was the era of new ideas, new geographical discoveries, new political regimes, etc. Something amazing happened in the minds of people that they were able to look at the usual picture of the world from a different angle. A fatal emergent leap took place in the development of human culture, science, and philosophy.

"Galileo's demonstration that God was not the present source of astral energy; Copernicus's proof that the earth spun on its own axis and revolved about the sun; Gassendi's assault on astrology and his theory of atomic energy; the revelations of the microscope and of Harvey and Huygens as to the physical resemblances between mankind and lower organisms; all these undermined the philosophical explanation of reality which had been generally accepted from the time of Plato, and of which Aristotle had been the acknowledged authority" (Morison, 1934: 4).

John Winthrop Jr. (1606–1676), the eldest son of the first governor of the Massachusetts Colony, John Winthrop (1587–1649), probably brought the first telescope to America. John Winthrop Sr. was a famous Puritan philosopher and author of *A Modell of Christian Charity* (1630). His views were full of rigorism and theocracy, he believed that God created people unequal, and this manifests the omnipotence of God. God created this world and all possessions belong exclusively to God, therefore personal enrichment is impossible, but enrichment of the church is possible. These ideas of collective enrichment made possible the costly voyage to the New World, from which one can conclude that the Puritan ethic contributed to the colonization and development of new territories. His son, John Winthrop Jr. was passionate about the sciences; such an assessment can be given because he studied a lot. At one time, he studied at Bury St. Edmunds grammar school, King Edward VI School, and Trinity College, Dublin, and he studied law at the Inner Temple, London. "The first colonial telescope was probably introduced by Winthrop around 1660" (Yeomans, 1977: 415-416).

In his letter, dated October 25, 1660, to Samuel Hartlib, he wrote about his telescope. It is known from the letter that John Winthrop Jr. had a 10-foot telescope and observed the planets. It is not known whether he himself made it, or whether someone made it for him, but there is a mention of the presence. "That opticall lanthorne wilbe very usefull, I shalbe glad to heare it perfected: I long much to heare of the manner of the fabrique of that new Telescopium in holland, I hope he will describe, if hath not already in his Systema Saturnium. my Telescop: of about 1o foot doth shew little of Saturne" (Winthrop et al., 1957: 62). This letter was written in 1660 when John Winthrop Jr. was governor of the Connecticut colony, which means that as early as the middle of the 17th century, astronomical observations of the starry sky were being made in America. Perhaps these observations were of little scientific value, but the fact itself proves that the Puritan style of thought had an inherent interest in natural philosophy, cosmology, and astronomy.

The second telescope in America is known from another correspondence of John Winthrop Jr., Ronald Sterne Wilkinson suggests in his article *John Winthrop, Jr., and America's First Telescopes* (1962) a fragment of one letter: "A letter from Winthrop to Benjamin Worsley, F.R.S., dated October 27, 1670, states: 'I seldom looke upon the Constellations of the heavens, or the planetts, especially Jupiter, with my telescope, or the glorious Constellation of Orion, but the most grateful memory of yourselfe is fresh to my thoughts & soule.' The letter has led historians to suggest that the little glass was a gift of Worsley during Winthrop's stay in London" (Wilkinson, 1962: 520).

It may seem that a couple of almanacs, several telescopes, and studies at Harvard, that is all phenomena of interest in cosmological problems. However, it is necessary to place the accents correctly. In conditions of strict rigorism and a puritanical worldview, which had a total and overwhelming effect, even the appearance of certain phenomena is essential. Changes in the worldview accumulate gradually, from single phenomena, these changes are subsequently realized in leaps and bounds. Thus, from the first telescopes, which brought the

infinitely large closer, from the first microscopes, which discovered the infinitely small, from these first steps great leaps of humanity began, great revolutions in consciousness.

Conclusion

There is a belief that Puritan philosophy in early American philosophy was dominated by harsh religious rigorism, theocracy, meager aesthetics, and absolutized Christian ethics. In the 17th century, philosophy was perceived ambiguously, from a synonym for education to natural philosophy and experimental science. With the advent of the new methodology of Francis Bacon and Cartesian philosophy, interest in experimental sciences is growing in Europe. In turn, the Copernican heliocentric system is gradually becoming popular, which was accepted by some thinkers as a new truth, and rejected by others as heresy. In 17th century America, Puritan thinkers mainly specialized in theological reflections, but also showed interest in new sciences and a new image of the world. Thomas Harriot, Nathaniel Mather, John Winthrop Jr., and others were interested in cosmology and engaged in astronomical observations both with the naked eye and with the help of the first telescopes that were in America in the middle of the 17th century. In addition to the availability of tools, evidence of interest in cosmological mysteries: astronomical almanacs and calendars, in which both heliocentric and geocentric systems could exist in parallel.

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