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The “Christian Natural Philosophy” of Otto Casmann (1562–1607): A Case Study of Early Modern Mosaic Physics*

Abstract: This article aims to present a detailed analysis of the “Christian natural philosophy” elaborated by the German humanist philosopher and theologian Otto Casmann (1562–1607) in his various works. To this end, Casmann’s general idea of *philosophia Christiana* is discussed and critically evaluated. Regarding natural philosophy, or physics, attention is paid mainly to topics such as cosmogony and cosmology, which Casmann promised to have developed biblically and independently of the pagan (namely Aristotelian) tradition. However, when Casmann’s natural philosophy is analyzed in detail, his resolute emphasis on the literal reading of the Bible, the cornerstone of his entire concept, turns out to be problematic. Similarly, despite his resolutions, his natural-philosophical views are, to a considerable extent, still dependent on Aristotelian terms and concepts.

Keywords: Otto Casmann, Mosaic physics, Christian natural philosophy, Aristotle

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Introduction

Otto Casmann (b. 1562 in Warburg – d. 1607 in Stade) was a German humanist philosopher and theologian, a Calvinist convert, who is at present mostly known as a mere historical figure listed in companions to psychology and anthropology. There, he is usually presented as one of the first intellectuals to have used these terms, followed by a concise summary of his (pre-modern) understanding of these disciplines as proposed primarily in his early work *Psychologia anthropologica sive animae humanae doctrina* (1594).¹ Besides that, Casmann has been an object of scholarly interest for his contributions to angelography and demonology, mainly thanks to his work *Angelographia seu Commentationum disceptationumque physicarum prodromus problematicus de angelis seu creatis spiritibus a corporis consortio abiunctis* (1597).²

With respect to natural philosophy, Casmann was studied already in the 1910s by Dietrich Mahnke, who characterized his endeavor as “unmodern” and “imperfect Christian physics” (*unmoderne, unvollkommene Christliche Physik*); according to Mahnke, Casmann tried to abandon the peripatetic and scholastic philosophical framework but eventually presented an eclectic mixture of various sources, including even – and to a significant

¹ For a general evaluation of Casmann’s role for psychology and anthropology, see e.g., M. Schrenk: *Über den Umgang mit Geisteskranken: Die Entwicklung der psychiatrischen Therapie vom “moralischen Regime” in England und Frankreich zu den “psychischen Curmethoden” in Deutschland*. Springer, Berlin–Heidelberg–New York 1973, p. 119. There are, however, more detailed studies, reflecting a broader intellectual context, such as U. Kordes: *Otho Casmanns Anthropologie (1549/96). Frömmigkeit, Empirie und der Ramismus*. In: *Spätrenaissance-Philosophie in Deutschland 1570–1650: Entwürfe zwischen Humanismus und Konfessionalisierung, okkulten Traditionen und Schulmetaphysik*. Ed. M. Mulrow. Niemeyer, Tübingen 2009, pp. 195–210; M. Edwards: *Body, Soul, and Anatomy in Late Aristotelian Psychology*. In: *Matter and Form in Early Modern Science and Philosophy*. Ed. G. Manning. Brill, Leiden–Boston 2012, pp. 52–55; D. Cellamare: *Anatomy and the Body in Renaissance Protestant Psychology*. “Early Science and Medicine” 2014, vol. 19, pp. 359–362.

² See S. Clark: *Thinking with Demons: The Idea of Witchcraft in Early Modern Europe*. Oxford University Press, Oxford 1999, pp. 162–166. For an overview of Casmann’s life and publications, see D. Mahnke: *Rektor Casmann in Stade, ein vergessener Gegner aristotelischer Philosophie und Naturwissenschaft in 16. Jahrhundert*. “Archiv für die Geschichte der Naturwissenschaft und der Technik” 1913, no. 5, pp. 190–197, 226; and P. Forshaw: *Casmann, Otto*. In: *Encyclopedia of Renaissance Philosophy*. Ed. M. Sgarbi. Springer 2017 [e-book].

extent – Aristotle’s works and those of the Aristotelian tradition.³ Although somewhat outdated and simplifying (e.g., due to analysis of only a selection of Casmann’s works), Mahnke’s study remains, surprisingly, still the only overview of Casmann’s entire philosophy (including its natural part), albeit rather general.⁴

In the following decades, even the leading scholars in the field of Christian, or Mosaic, physics, for instance, Jaromír Červenka and Ann Blair, dealt with Casmann only cursorily: Červenka merely mentions him as one of the representatives of genuine (*eigentlich*) Mosaic philosophy; Blair, who presents a similar division of Mosaic physics into true literalists (including Casmann) and those “who made little pretense at a literal reading of the Bible,” dedicates one concise paragraph to him as well (not mentioning other rather particular remarks).⁵

The division into “genuine” and “syncretist” Christian natural philosophers can be traced back to the 18th-century historiographers who first brought scholarly attention to Casmann. Johann Franz Buddeus mentions Casmann as an instance of a strong and sincere effort to establish a Christian philosophy that was, in effect, far more problematic than beneficial, most notably for Casmann’s intention to remove the barriers dividing reason and revelation. Johann Jakob Brucker also describes Casmann as one of the leading representatives of Mosaics physics but gives just a list of his publications and adopts Buddeus’s general characteristic.⁶

Concerning Casmann’s concept of Christian natural philosophy as proposed in his texts, historians of philosophy have pointed out his work *Cosmopoeia et Oὐρανογραφία Christiana* published in Frankfurt am Main in 1598. However, Casmann had been systematically dealing with natural philosophy closely related to Scripture since the very beginning of his scholarly activities. To fully grasp his understanding of *philosophia Christiana*, we also need to analyze his other writings, such as *Marinarum quaestionum tractatio philosophica* (1596); *Angelographia* (containing many references to the planned *Cosmopoeia et Oὐρανογραφία*...); and *Somatologia, Physica generalis, seu Commentationum disceptationumque physicarum syndromus*

³ D. Mahnke: *Rektor Casmann...*, pp. 185–187, 228–229, 239.

⁴ *Ibidem*, pp. 227–240, 352–362.

⁵ J. Červenka: *Die Naturphilosophie des Johann Amos Comenius*. Academia, Praha 1970, p. 113; A. Blair: *Mosaic physics and the search for a pious natural philosophy in the late Renaissance*. “Isis” 2000, vol. 91, no. 1, p. 45.

⁶ J. F. Buddeus: *Introductio ad historiam philosophiae Ebraeorum cum disseratione de haeresi Valentiniiana*. Typis & impensis Orphanotrophii Glaucha-Halensis, Halae Saxonum 1702, pp. 259–262; J. J. Brucker: *Historia critica philosophiae a tempore resuscitatarum in occidente literarum ad nostra tempora*. Tomus IV, Pars I. Apud Bernh. Christoph. Breitkopf, Lipsiae 1743, pp. 614–615.

problematicus I. (1598) which functions as the second part of *Angelographia* but at the same time as the first part of the *Theatre of Physics* (*prima Physici Theatri pars*), which was concluded by *Cosmopoeia et Οὐρανογραφία Christiana* published in the same year.⁷

Furthermore, it is also necessary to study Casmann's later works published during the first decade of the 17th century, for his concept of *philosophia Christiana* reverberates in texts such as *Philosophiae et christianae et verae [...] modesta assertio* (1601); *Nucleus mysteriorum naturae enucleatus* (1605); and *Hominis Spiritualis anatomia et medidatio ex Sacrae scripturae [...] deducta* (1605).

Philosophia Christiana

Since Casmann frequently uses the term *philosophia Christiana* as a general designation for his intellectual efforts, we first need to try to reconstruct his conception of this "true Christian philosophy," upon which his natural philosophy, but also economics and ethics, were based.⁸ The most explicit definition is found in Casmann's book *Philosophiae et Christianae et verae [...] modesta assertio* (1601). Besides a rather general characteristic that Christian philosophy represents "an ordered system of Christian wisdom ensuring both the knowing of the truth and practicing of the good," Casmann claims that this true philosophy should be based on three sources, viz. the Word of God (*verbum Dei*), well founded reason (*vera ratio*), and unerring experience (*non fallens experientia*). In the Word of God, knowledge of natural things was set forth especially by Moses (primarily in the Book

⁷ Cf. its subtitle *Commentationum disceptationumque physicarum syndromus methodicus et problematicus II*. As the content testifies, *Somatologia* was indeed written earlier than *Cosmopoeia et Οὐρανογραφία*...

⁸ For the intellectual background of the term "Christian philosophy," see A. Blair: *Mosaic physics*..., p. 34. As the cases of many of Casmann's contemporaries attest, he was far from being the only author working with this or synonymous labels. Cf. most notably Lambert Daneau (1530–1595), the author of *Physica Christiana, sive De rerum creatarum cognitione et usu, disputatio e sacra Scriptura fontibus hausta, et decerpta* (first edition published in 1576 in Lyon) and Kort Aslaksson (1564–1624) who wrote *Physica et ethica Mosaica, ut antiquissima, ita vere Christiana, duobus libris comprehensa. Quorum continetur libro Primo, Physica Christiana [...] Secundo Ethica Christiana [...]*. (Hanau, 1613). Note that Ann Blair (p. 34) traces roots of this intellectual effort as far as to St. Augustine.

of Genesis), Solomon, Job, and Jesus; this was then developed by Casmann’s contemporaries Lambert Daneau and Levinus Lemnius.⁹

Regrettably, the text does not give any details regarding the other sources of true knowledge – reason and experience. Nevertheless, Casmann uses the term *experientia* occasionally throughout his entire philosophical work: *teste experientia Meteorologica; testatur hoc experientia sensuum; tamen sensus experientia testetur; experientia est testis*. At first glance it is evident that this conception of experience cannot be understood in terms of the emerging empirical science but in the sense that was common in the era before the so-called Scientific Revolution. For Casmann as well as for his contemporaries, *experientia* serves either to corroborate the claims of authorities (Scripture or philosophers) or to present a personal experience. Furthermore, if we look closer into Casmann’s views, we will see that he decisively denied any experimental interference with the truths revealed in Scripture. For instance, he stated that the philosophical efforts to explain the role of celestial bodies on the phenomenon of tides are futile since the Bible states only their function in measuring time; their direct influence on elements and man is never mentioned there. Similarly, the efforts to measure the distance between the upper border of heaven and the center of the earth suggest an undue curiosity that will never lead to success (Casmann supports his claims by many references to past and contemporary mathematicians whose calculations were very often contradictory).¹⁰

Another crucial text for understanding Casmann’s view of the true Christian philosophy and its *methodology* are the *Prolegomena generalia* to his *Cosmopoeia et Oὐρανογραφία...*, where he argues for the primacy

⁹ O. Casmann: *Philosophiae et Christianae et verae [...] modesta assertio...*, pp. 1–15, 30–31, 147–155; *Christiana igitur Philosophia nobis est ordinatum systema sapientiae Christianae ad salutarem tum cognitionem Veri, tum actionem Boni* (p. 5). For the definitions as proposed by Casmann’s Mosaic contemporaries, cf. e.g., L. Daneau: *Physica Christiana...* Tertia editio, pp. 36–48; K. Aslaksson: *Physica et ethica Mosaica...*, pp. 4–10. For the full bibliographical information of all Casmann’s, Daneau’s and Aslaksson’s analysed works, see the bibliography at the end of this article.

¹⁰ O. Casmann: *Cosmopoeia et Oὐρανογραφία...*, pp. 394, 550, 745, 775, 578–580, 622; O. Casmann: *Philosophiae et Christianae et verae [...] modesta assertio*, Epistola dedicatoria, f. 3v. With respect to Casmann’s *Marinarum quaestionum tractatio philosophica*, it has been emphasized that he also employed the experience of mariners regarding the specific height of tides in relation to different geographic locations. See D. Mahnke: *Rektor Casmann...*, pp. 186, 354–355. However, I would be skeptical to Mahnke’s conclusion that Casmann worked with the Word of God, experience, and reason as interconnected and equal sources. In his natural philosophy he clearly favored the testimony of Scripture from the point of view of both “epistemological” reflection and “applied” sources of knowledge. Note that even Mahnke himself does not see Casmann as a proponent of modern experimental science, see *Ibidem*, pp. 230–234.

of the sacred texts over profane philosophers. His reasoning is straightforward: Scripture is beyond any doubt a more reliable source of knowledge in natural philosophy than any pagan philosophy (namely Aristotle and Plato) because, in Scripture, the Creator himself speaks (through the human authors) about his own creation. It is the omniscient God who is the source of all wisdom (*omnis sapientiae fons*). Faith in the revealed, reliable, and trustworthy Scripture should be preferred to erroneous ancient authorities. In the case of pagan philosophers, we encounter at best erudite conjectures, but very often also foul gaps (*impurae lacunae*). Casmann stresses that the individual profane philosophies frequently oppose one another. Moreover, and this brings us back to the question of the sources of true knowledge, both reason and the senses (i.e., experience) can be mistaken as well – unlike the authority of Scripture.¹¹

The next question that Casmann raises in the *Prolegomena* is whether it is possible to contort the natural philosophical testimony of Scripture into a form consonant with the principles of the pagan, especially Aristotelian tradition of natural philosophy. The answer is, as one would expect, negative. The Holy Scripture is the basic standard and touchstone (*lydius lapis*) of the entire philosophy of nature. Thus, all possible knowledge of the world must be based on Scripture only; only through the prism of Scripture should pagan philosophy be evaluated, not the other way round.¹²

In the subsequent paragraphs, Casmann defends the truthfulness of Christian natural philosophy and disproves the attacks on Moses and the Book of Genesis forged in the past by the pagan Neoplatonist Simplicius of Cicilia. His main goal is to vindicate the coherence and consistency of the biblical text in its literal sense. In the secondary literature dealing with Mosaic physics, from Johann Jakob Brucker in the 18th century to Ann Blair in 2000, Casmann is characterized as a “biblical literalist.”¹³ Indeed, against Simplicius and his peripatetic arguments, Casmann defends, for example, the view that darkness existed before the creation of light (cf. Gen 1:1) (for Simplicius, the privation – darkness – could not have been created before its substance – light). Another issue was that the Sun was created as late as on the fourth day of creation and, still, the days before existed due to light: Simplicius claimed that light could not have existed without its bearer, the Sun; Casmann replied that the omnipotent God could have in the extraordinary and miraculous work of creation created light as belonging to another object (*lux quaedam; lux informis et imperfecta*) and only on the fourth day either

¹¹ O. Casmann: *Cosmopoeia et Οὐρανογραφία...*, Prolegomena generalia, f. a6r–a8r, b2r–v.

¹² Ibidem, Prolegomena generalia, f. b2r–b4r and pp. 88–95.

¹³ J. J. Brucker: *Historia critica...*, pp. 610–615; A. Blair: *Mosaic physics...*, pp. 35–50.

concentrated this light in the Sun, or transformed this temporal object into the Sun itself.¹⁴

However, an attentive reading of all the relevant texts by Casmann reveals that his alleged biblical literalism is problematic, even when speaking about his most famous Mosaic work, the *Cosmopoeia et Οὐρανογραφία*... For instance, during polemics with Lambert Daneau regarding the existence of air as an element (which Daneau denies), Casmann argues that the fact that the Holy Scripture says nothing about a particular thing does not imply that this thing does not exist.¹⁵ It seems that Casmann is not troubled by (his own!) literalist imperative and somehow grants a space for further surmises of the divine testimony.

To give another instance, in the *Angelographia*, Casmann admits that in the Book of Genesis, Moses remains silent about the creation of springs, rivers, lakes, mountains, valleys, metals, minerals – but also of angels. However, this does not mean that they do not exist. Accordingly, although other biblical texts do mention angels and their origins (Ps 148; Dn 3; Col 1), Casmann is troubled by the question of why Moses passed over this topic in silence. The explanation he finds most probable is the so-called accommodation theory which means that Moses, aware of the ignorance of the Hebrews, adjusted and accommodated his narration to their wits.¹⁶

This attitude, however, reveals how Casmann’s use of the Bible in its literal sense is even more problematic. On the one hand, in *Cosmopoeia et Οὐρανογραφία*..., he claims that if one seeks to answer questions that surpass the message of the revealed Word of God, he will get lost in delusions; and explicitly declares that if Moses says nothing about angels and their creation, then no knowledge regarding this matter can be obtained.¹⁷ On the other hand, in *Somatologia*, he, without any objection, conveys opinion that Moses in Genesis 1 – by means of a synecdoche – locates the abode of angels in the heavens.¹⁸ What is even more striking, in *Angelographia*, Casmann devotes to the question of creation of angels an entire chapter.¹⁹

Another instance illustrating the contradictoriness of Casmann’s dealing with Scripture in its literal sense appears when we compare the passages

¹⁴ O. Casmann: *Cosmopoeia et Οὐρανογραφία*..., Prolegomena generalia, f. b5r–c1r, c4r, d4v. See also Idem: *Somatologia*..., pp. 348, 367–374; and Idem: *Nucleus*..., pp. 49–50, which present similar accounts.

¹⁵ L. Daneau: *Physices Christianae pars altera*. Eustathius Vignon, Genevae 1580, pp. 30b–33, 63, 73a–b; O. Casmann: *Cosmopoeia et Οὐρανογραφία*..., pp. 649–651.

¹⁶ Idem: *Angelographia*..., pp. 30, 94–101.

¹⁷ Idem: *Cosmopoeia et Οὐρανογραφία*..., pp. 411, 432, 439–440.

¹⁸ Idem: *Somatologia*..., pp. 45–46.

¹⁹ Idem: *Angelographia*..., pp. 94–108.

focusing on the creation of herbs and trees in *Somatologia* and late *Nucleus*. In *Somatologia*, he advocates the inner consistency of Genesis 1: although Moses wrote that herbs and trees procreate by semen, the term “semen” must be understood in a general sense (*generaliter*), which would allow to include other ways of reproduction, for example, grafting, for it is evident that herbs procreate in many ways. Similarly, one could object that Moses stated that all trees were created as fructiferous, but it is easy to find those that do not produce edible fruits. Casmann resolutely replies that all herbs and trees are edible, at least in some of their parts; for example, Adam, the first man, was endowed with the ability to distinguish eatable and uneatable roots, and this skill was passed on to further generations.²⁰ This intricate reasoning is simply pulled down in *Nucleus*, where Casmann without hesitation divides trees into fructiferous (*fructiferae*) and sterile (*steriles*), viz. elm, alder, lime, birch, willow, poplar, etc.²¹

Natural Philosophy

Besides the histories of anthropology and psychology, philosophical contemporaries, successors, and historians of philosophy until nowadays noted Casmann for his natural philosophy, or Mosaic physics. I will now proceed to analyze and evaluate his concept of Christian natural philosophy and assess whether he succeeded in this field of his intellectual efforts, even though his general conception of *philosophia Christiana* and its basic *methodology* reveals deep inconsistencies.

The leading authority in the study of natural philosophy, or *physica*, must be the Holy Scripture and especially Moses who is the most ancient and wisest of all writers and handed down to us the true story (*historica narratio*) of the act of creation. The wisdom of the Bible must serve as the cornerstone of any knowledge of nature: “To us Christians, the philosophical is not what is pagan, what is Aristotelian, or Ramean, but what is true,” writes Casmann.²²

²⁰ Idem: *Somatologia*..., pp. 53–56.

²¹ Idem: *Nucleus*..., p. 235.

²² Idem: *Cosmopoeia et Οὐρανογραφία*..., pp. 41, 203: *Nobis Christianis Philosophicum est, non quod Ethnicum, non quod Aristotelicum, non quod Ramaeum, sed quod verum* [...].

As the composition of the first chapters of *Cosmopoeia et Οὐρανογραφία...* suggests – and as Casmann’s proclamations imply – he intends to deal with the natural philosophical issues treated in this work first from the biblical perspective (*apud sacros auctores*), and only then from the point of view of profane philosophical authorities (*apud philosophos*). But surprisingly, the more detailed and subtle topics Casmann discusses, the more he focuses on the different philosophical speculations which he explicates, analyses, and compares. The references to Scripture are often moved to the conclusions of individual chapters and located in sections resembling concluding remarks. Such methodology would be legitimate even in the field of *philosophia Christiana* and does not *a priori* imply that the biblical text is being marginalized. However, the practical effect is that the references to Scripture, both explicit and implicit, are significantly overshadowed by the space dedicated to philosophical authorities.

To give some examples: In the part of *Cosmopoeia et Οὐρανογραφία...* dedicated to the nature of the heavens, Casmann presents two chapters. The first one summarizes the philosophical and theological arguments for the physical identity of the elemental sphere and the element(s) constituting the heavens (*viz.* pre-Aristotelian philosophy including Plato; the Church Fathers, etc.); the other is headed by Aristotelian arguments against this identity (the Aristotelian assertions are, however, immediately refuted through means of natural philosophy, logic, and contemporary astronomy with its observations).²³ In other parts of the book, the biblical component of the exposition is almost completely missing. When dealing with the existence of vacuum in the world, Casmann, in fact, confronts peripatetic and Patrician (*i.e.*, derived from Francesco Patrizi’s thought) natural philosophy and the resolving role of Scripture is heavily marginalized (at best it fulfills a mere rhetoric function).²⁴ Finally, the qualities of air (namely, movement and heat) are discussed by summarizing and comparing specific philosophical views proposed by Jacopo Zabarella, Nicolaus Taurellus, Andrea Cesalpino, etc., without any reference to Scripture at all.²⁵ Thus, *Cosmopoeia et Οὐρανογραφία...* turns out to be to a considerably synthetic work, in some aspects resembling the contemporary encyclopedias; its proclaimed emphasis on Moses and Scripture in general as the touchstone of the only true natural philosophy is overshadowed by the vast space granted to profane authorities.

This “profane” profile is even more evident in *Somatologia*. The Bible’s authority is withdrawn entirely in favor of philosophical, mostly peripatetic,

²³ Ibidem, pp. 449–486, 513–516.

²⁴ Ibidem, pp. 634–645.

²⁵ Ibidem, pp. 760–768, 777–794.

sources, namely Zabarella, Taurellus, Julius Caesar Scaliger, Jean Bodin, Benedict Pereira, or the already mentioned Francesco Patrizi. Even though the work is programmatically presented as defending the true Christian philosophy (*vera Christiana philosophia*) against its pagan antipodes, it is focused on traditional peripatetic topics such as matter, form, substance, and accidents related to natural bodies.²⁶

The content of the first book of *Nucleus* is very similar, describing the natural body and its qualities. There, Aristotle is explicitly named as an authority in natural philosophy; the natural body is investigated from the point of view of its four causes, and Casmann frequently uses terms such as substance, accident, potentiality, actuality, and endorses the peripatetic interpretation of motion. Aristotle is frequently quoted and referred to as an authority in definitions also in the second book of *Nucleus* dealing with various topics touched upon already in *Cosmopoeia et Oὐρανογραφία...*. Although the emphasis on the Bible is somewhat greater than in the first book, it is neither a leading nor an exceptional source of exposition.²⁷

Cosmogony and Cosmology

Despite the skeptical assessment of Casmann's conception of Christian natural philosophy and Christian philosophy in general, as I have presented it in the paragraphs above, some topics in his works were treated in the proper "Mosaic" way and, thus, deserve closer attention.

One of them is Casmann's reasoning for the veracity of *creatio ex nihilo*. In all his works, he claims that the creation took place at the beginning of time (*in principio temporis*), by the sole Word of God (*verbo potentiae suae*), and out of nothing, that is, with no pre-existent matter. According to Casmann, on the first day formless matter (*massa informis seu prima materia; materia coeli et terrae*, cf. Gen 1:1) and spirit of the creatures (*spiritus creatorum*, cf. Gen 1:2) were created.

The facticity of *creatio ex nihilo* is advocated first of all by biblical means: Casmann thoroughly analyzes the Hebrew term *bārā'* (בָּרָא) used in Genesis 1:1 which, in his reading, means that a being is made out of

²⁶ Idem: *Somatologia...*, pp. 165–167.

²⁷ Idem: *Nucleus...*, pp. 7–8, 70–71; Idem: *Somatologia...*, pp. 31–32.

non-being (*ens ex non ente fieri*). He also discusses some biblical passages, namely 2 Macc 7:28, where, in the *Vulgate*, the term *ex nihilo* is explicitly used (*Peto, nate, ut aspicias ad caelum et terram, et ad omnia quae in eis sunt, et intelligas quia ex nihilo fecit illa Deus, et hominum genus*).²⁸ However, Casmann also relies on philosophical reasoning. He refers to some authorities and endeavors to propose genuine proofs. The most elaborated one is the metaphysical distinction between *creatio* and *generatio*. While the initial stage of generation is the privation of a form in a substance, so that it represents a mere transformation of the substantial form, creation does not start from a privation, but from absolute negation (*negatio absoluta*), nothing at all. Moreover, all generation occurs in time, whereas the creation occurred at the very beginning of time.²⁹

Another aspect showing how Casmann is sincerely trying to fulfill the imperative of reading Scripture literally (at least in some matters) is his advocacy of the facticity of the six days of creation. He defends it first by a detailed analysis of the biblical text, mainly from the etymological point of view. For instance, a possible objection could be raised from a reading of Sirach 18:1 (in the *Vulgate*: *Qui vivet in aeternum creavit omnia simul*); Casmann interprets the expression “simul” as “likewise” or “together” (*pariter* or *communiter*), regarding the completeness, but definitely not addressing chronology, that is, not meaning at the same time. In this issue, the primary source of reasoning is the Bible and its literal testimony.³⁰

In what follows Casmann analyzes the use of idioms in Scripture and presents a series of genuine, more or less philosophical arguments to support his beliefs. The fact that God created the world over a period of six days and not in one moment does not imply a lack of omnipotence on His part; on

²⁸ Idem: *Cosmopoeia et Οὐρανογραφία...*, pp. 79–82. The obvious counterargument, however, might be that in the Book of Genesis, the Hebrew terms for ‘create’ (בָּרָא, *bārā’*) and ‘make’ (עָשָׂה, *‘āsā*) are used interchangeably, and the term *bārā’* in Gen 1:1 does not imply *creatio ex nihilo* but refers to ‘a divine activity that is effortlessly effected’. See Ch. Hodge: *Systematic theology*. Vol. I. William B. Eerdmans Publishing Company, Grand Rapids 1940, p. 558; and F. Skolnik (Ed.): *Encyclopaedia Judaica*. Second Edition. Vol. 5. Thomson Gale, Detroit 2007, pp. 273–280. For an analysis of Genesis 1:1–2:4a and 2 Maccabees 7:28 from this point of view, see G. A. Anderson: *Creatio ex nihilo and the Bible*. In: *Creation ex nihilo: Origins, Development, Contemporary Challenges*. Eds. G. A. Anderson, M. Bockmuehl. University of Notre Dame Press, Notre Dame 2017, pp. 15–22. On the biblical concept of creation in general, see R. J. Clifford: *Creatio ex nihilo in the Old Testament/Hebrew Bible*. In: *Creation ex nihilo: Origins, Development, Contemporary Challenges*. Eds. G. A. Anderson, M. Bockmuehl. University of Notre Dame Press, Notre Dame 2017, pp. 63–75.

²⁹ O. Casmann: *Cosmopoeia et Οὐρανογραφία...*, pp. 85–88, 121–124.

³⁰ Ibidem, pp. 174, 198–200.

the contrary, it highlights the order and interconnection between individual beings and their dependence on their Creator – this is a proof not only of God’s omnipotence but also of His wisdom and goodness.³¹ Moreover, and somewhat rhetorically, if the world had been created in an instance, the consecration of the seventh day would be meaningless.³²

In his description of cosmogony, Casmann devotes most attention to the heaven and earth that emerged on the first day of creation from the primeval matter, for this matter was twofold, *materia coeli et terrae*. Thus, the created world encompasses both the superior bodies (*corpora superiora et aetheriora*) and the inferior bodies (*inferiora et elementaria*). These are situated in two distinct parts, the heavenly or aethereal one and the earthly or elemental one, and constitute a universal bond of all natural bodies.³³ Besides its specific matter, the world also has a form, an efficient cause (the Creator), and a final cause (the glory of God manifested in His creation but also human use – *hominis usus*).³⁴ This clearly peripatetic framework is reinforced by a list of the world’s accidents (quantity, shape, etc.). Such peripatetic terminology, however, does not prevent Casmann from dealing with questions related to the world primarily from a Scriptural point of view, that is, almost independently of Aristotelian natural philosophy (although in some cases he also relies on peripatetic reasoning, but mainly as a means of support for the biblical testimony). Thus, he argues for the existence of only one world, limited by the space and time that was created and will perish. In the part focusing on advocating that heaven is round Casmann employs peripatetic reasoning the most, as well as contemporary astronomical proofs.³⁵

The most elaborated part is Casmann’s description of the creation and structure of heaven (*coelum*). According to his interpretation of Genesis 1:1, heaven was created on the first day through the *materia coeli*, on which it was based. As such, heaven consist of three parts. The supreme one, or the third heaven (also *coelum summum*, *coelum coelorum*), popularly called *empyreum*, is the most perfect, created, invisible, and finite space where neither change nor corruption occurs (but will once perish).³⁶ The middle part, or the second heaven (also *aethereum*, *astriferum seu stellarum*), popularly called *firmamentum*, is a visible space (*expansio*, *spatium*) between the highest heaven on the one hand and the surface of the earth and waters on the other. In fact, it encompasses both the middle, stellar, heaven and the lowest,

³¹ Ibidem, pp. 202–203.

³² Ibidem, pp. 203–208.

³³ Ibidem, pp. 1–6, 120, 123–127, 274–275, 300.

³⁴ Ibidem, pp. 79, 117–119, 120–121, 127–132.

³⁵ Ibidem, pp. 157–272, 335–349. Cf. Aristotle: *On the Heavens*, II 4, 286b10–287b21.

³⁶ O. Casmann: *Cosmopoeia et Οὐρανογραφία...*, pp. 355–385, 409–410.

aerial, heaven, which are both subject to change, generation, and corruption. The stellar heaven is again divided into two spaces (*vulgo sphaeras et orbis*), namely, the higher bearing stars and the lower bearing planets (divided into superior, viz. Saturn, Jupiter, Mars, and inferior, viz. Sun, Venus, Mercury, Moon). However, Casmann denies that the spheres actually exist – for they are merely fictitious (*humana [...] inventio*).³⁷ Finally, the lowest part, or the first, aerial heaven, popularly just air (*vulgo aer*), borders on the elements of earth and water. Regarding the boundary between the second and first heaven, Casmann asserts that there is no sphere of fire, as the Peripatetics suggest.³⁸ On the contrary, for him, heaven as a whole is a single continual body whose individual parts differ only by qualities, not in their nature (*eiusdem naturae corpus*).

These reflections on heaven’s nature and structure are closely related to the question of the separation of waters from waters, as put forward in Genesis 1:6. Following the literal sense of Scripture, Casmann identifies superior and inferior waters (*aquae superiores et inferiores*) divided by the firmament, that is, a boundary (*terminus interiectus*) between waters that emerge in the air (in the *coelum aereum*) and fall to the earth (such as clouds, rain, hail *et alia meteora*) and waters located below air (in seas, lakes, etc.).³⁹

The firmament, correctly called *expansum*, is not a solid border but an extended space (*spatium, spatium expansum*) covering the whole aerial heaven by which the superior and inferior waters are divided. Strictly speaking, Casmann points out, the Bible speaks of two *expansa*: while the already described meaning synecdochically refers to the aerial heaven, the *expansum*, understood universally, means the whole space covering both the second and the first heaven, namely, stellar and aerial, which borders on the supreme, invisible heaven (this is the border that should properly be called *firmamentum*).⁴⁰ To support this claim, Casmann interprets the biblical legacy as presented in both the Vulgate and the Septuagint, with a reference to the Hebrew original. The etymology of the term “raqia” (רָקִיעַ) used in Genesis 1:7 obliges one to prefer the Latin equivalent *expansio* or *extensio* to *firmamentum* since it better corresponds to its meaning as an extended space.⁴¹

³⁷ Ibidem, pp. 440–449, 516–580; O. Casmann: *Angelographia...*, pp. 344–354.

³⁸ O. Casmann: *Cosmopoeia et Οὐρανογραφία...*, pp. 580–672, 747–801. Casmann was well aware that the previous philosophical and theological tradition distinguished multiple heavens, namely eight, ten, or eleven. However, he rejects this view as heavily dependent on Peripateticism. Cf. ibidem, pp. 586–607.

³⁹ Ibidem, pp. 447–449, 653–655, 708–715.

⁴⁰ Ibidem, pp. 6–7, 517, 578, 653.

⁴¹ Ibidem, pp. 388–391, 396–397, 444–447, 711–715; O. Casmann: *Nucleus...*, pp. 74–77.

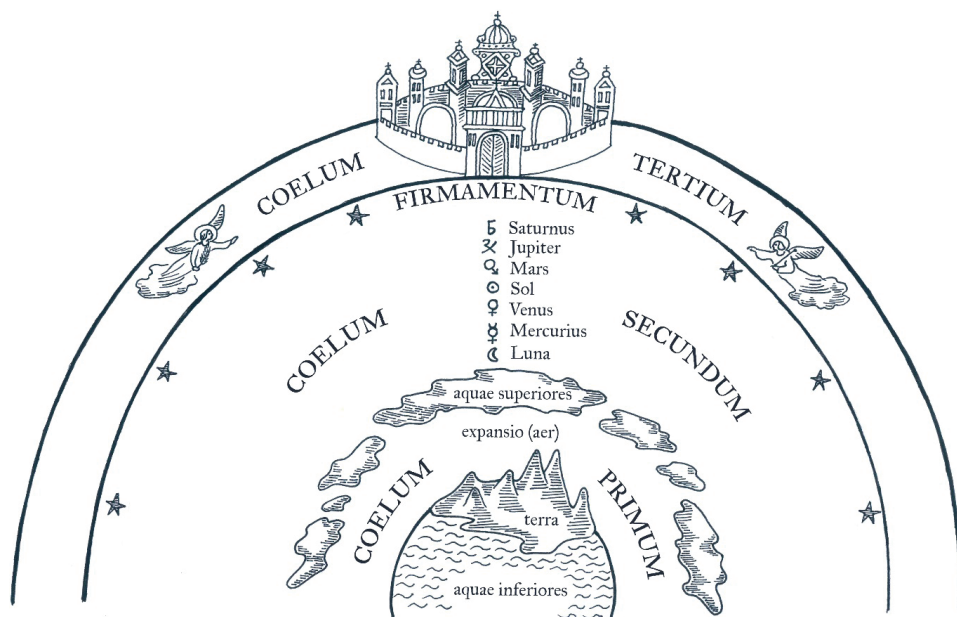


Figure 1. Reconstruction of Casmann's cosmology

Conclusions

As the case of the “Christian natural philosophy” elaborated by Otto Casmann shows, it might be very precarious to determinedly claim some certain features of Mosaic physics without any further study. Although one of the problematic aspects, namely, the relation of the proponents of this unique early modern natural-philosophical endeavor to Aristotle and Aristotelianism, has been discussed (yet rather generally) since the earliest modern histories of philosophy (J. F. Buddeus) until our present (A. Blair), the other has been entirely neglected.⁴² Even though Casmann and some other philosophers (i.e., Francisco Vallés, Lambert Daneau, Levinus Lemnius, Thomas Lydiat, and Kort Aslakssøn) have been labelled as “true literalists”

⁴² J. F. Buddeus: *Introductio...*, pp. 256–264; A. Blair: *Mosaic physics...*, p. 55. For a general discussion of the early modern relation to Aristotelianism, see C. Martin: *Subverting Aristotle: Religion, History, and Philosophy in Early Modern Science*. Johns Hopkins University Press, Baltimore 2014.

among Mosaic natural philosophers, it is a serious question whether they were able to fulfill this crucial imperative of their program – to read and interpret the Bible in its literal sense. We saw that Casmann presented a significantly original, scripturally based cosmogony and cosmology, but his general natural-philosophical conception reveals serious limits concerning the commitment to approach the Bible literally; not mentioning the striking and blatant employment of non-biblical sources. This article, dedicated to only one of the authors, demonstrates that the issue of consistency of early modern Mosaic physics must be in the future comprehensively studied in order to present solid answers.

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