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ADAM DROZDEK

NOËL-ANTOINE PLUCHE AND THE SPECTACULARITY OF NATURE

Abstract. The article present views of abbé Pluche whose books were very popular in 18th century France. In his *Spectacle of nature* and *The history of the heavens* he wanted to stir in his readers an interest in the world around them. Nature is a book written by God, the creator of this nature, and by reading it properly, people can see the providential care of God. To combat atomism and randomness, Pluche introduced in his physics many elementary substances as foundational elements, of which particularly important was light.

Pluche devoted considerable attention to the problem of the origin of religion and religious rites. For Pluche, monotheism was the original religious faith and idolatry was a later religious development which was basically a perversion of monotheism.

Key words: Pluche; physics; theology; teleology; monotheism.

Abbé Pluche was an eighteenth century author whose main opus, a massive 9-volume work, *The spectacle of nature*, proved to be enormously successful in his times, in France and abroad. In 18th century France, *The spectacle of nature* was in 41% of private libraries, higher than Voltaire and Rousseau. On the other hand, among the studies published in 1989-1999 on authors in the 18th century, only three were devoted to Pluche, whereas over a thousand to Voltaire.[1] Notwithstanding such a precipitous change in interest of Pluche's work, it is worthwhile to look at this work to see that the Enlightenment age was not quite dominated by the Encyclopedists and the like-minded philosophers and scholars.

ADAM DROZDEK – is an Associate Professor at Duquesne University in Pittsburgh, USA; address for correspondence: Pittsburgh, PA 15282, USA; e-mail: drozdek@duq.edu

[1] Benoît DE BAERE, *Trois introductions à l'abbé Pluche: sa vie, son monde, ses livres* (Geneve: Droz, 2001), 9, 55.

1. WHY THE *SPECTACLE*?

There were two reasons for Pluche to have written the *Spectacle* and a two-volume *The history of the heavens*. The *Spectacle* in particular was aimed primarily at a young audience and Pluche wanted to stir in the youth an interest in the world around them. People don't know how a windmill works or a watch (S 6.401),[2] but they spend a lot of time on quadrille or discussing monads of Leibniz (402). The surroundings are full of natural and man-made wonders and yet they are all too often simply ignored. Instead, people occupy themselves with trifles or with useless, unilluminating metaphysical disputes. For this reason, Pluche set his work as an encyclopedic presentation of science, manufacturing, and art of his times. This survey is competent and well-informed, relying on scholarly authorities, and it tries to present state-of-the art achievements of science. And thus, Pluche walks the reader in great detail through physics, biology, chemistry, etc.

The second goal is of a spiritual nature. "Nature is the wisest and most perfect of all the books proper for the cultivation of our reason since it encompasses at the same time the objects of all sciences and the intelligence is not limited to any languages or any persons" (S 1.v). This is a book written by God, the Creator of this nature and by reading it properly, people can see the providential care of God, thus leading them to the recognition of God's omnipotence, grace, and His love for this world. Therefore, "after the desire to accustom the youth to recognize the voice and the will of God in all that appears before our eyes every day, we have nothing else in our heart than for them [the youth] to procure the knowledge of things in life that are most common and most ordinary" (2.xvi). In nature, there is nothing trifle, since everything was created by God and as such everything serves some purpose, not necessarily known to us, and thus it is worthy of investigation. Even a common fly, treated normally as at least an annoyance, is worthy of attention. Generally, insects are an infinite delight "by their diversity, by their inclinations, by their ruses, by surprising proportions of their organs and by a hundred of other curiosities I observe. If God did not consider it to be undignifying of him to create them, is it undignifying for us to pay attention to them?" (1.5).

[2] References are made to Pluche's works:

S – *Le spectacle de la nature*, Paris: Freres Estienne, vol. 1, 1732, vol. 2, 1748 [1735], vol. 3, 1736 [1735], vol. 4, 1739, vol. 5, 1746, vol. 6, 1751 [1746], vol. 7, 1747 [1746], vols. 8-1, 8-2, 1750, Paris: Veuve Estienne, 1732-1750.

H – *Histoire du ciel*, Paris: Veuve Estienne & Fils, 1748[2] [1739].

The goal of the study of nature should thus lead the student to God and by the recognition of the divine providence to the recognition of the necessity to follow God's precepts for human life.[3] The study should satisfy human curiosity about the world, but it has also the moral goal; it forms not only the human reason, but also the human heart (S 2.iv).[4]

2. LIMITS

Pluche said that he didn't quote the Bible to confirm physics; he used "history and experimental physics to show the excellence of the Scripture" (H 1.xxiv).

"Most natural things are mysteries impenetrable to our reason just as revealed mysteries" (H 1.xxxiii) and physics does not teach about the nature of things exercised only for the prudent use of nature (xxxiv). That is, the only judicious use of physics is experimental physics (S 4.565) since it conforms to the human condition and thus it can be called the system of the Providence (566).[5] Going beyond observations and experiments to speculations concerning the hidden and experimentally inaccessible mechanism of nature is a futile endeavor. To try to determine what regulates the course of the universe and to penetrate the general structure is to run after vain dreams. We don't know the structure of the stomach, said Pluche, since God discharged us from the care of digestion. We sense when we are hungry and digestion is done without our conscious contribution. In his view, if we knew the mechanism of digestion, we would want to regulate it (568-569). It thus appears to be a bad thing for Pluche to try to intervene in the digestive mechanism, but would not the regulating this mechanism in a sick person be a good thing? Pluche may have answered yes, to the extent to which such

[3] Pluche's "natural history scrutinizes, observes, describes to arouse our curiosity in the face of the admirable spectacle of nature in the hope that it will lead us to the threshold of the enigma to which only religion holds the key." Jean SEIDENGART, "Le 'système du monde' de l'abbé Pluche dans son 'Histoire du ciel'," in: *Écrire la nature au XVIII^e siècle, autour de l'abbé Pluche*, eds. F. Gevrey, J. Boch, J.-L. Haquette (Paris: PUPS, 2006), 345.

[4] For this reason, "the education advocated by Pluche should easily lead from knowledge to faith, from reason to sentiment, from the exercise of the intelligence to morality and devotion." Jean-Fabrice CHASSOT, *Le dialogue scientifique au XVIII^e siècle. Postérité de Fontenelle et vulgarisation des sciences*, PhD diss. (Paris: Sorbonne, 2008), 260.

[5] Experimental physics is "a language that allows [us] to comprehend (as much as possible) the Providence," it is "the interpreter of the divine will." Guilhem ARMAND, "Le Spectacle de la nature ou l'esthétique de la révélation," *Dix-huitième siècle* 2013, 4: 338-339.

regulation can be done in an experimentally confirmed manner. Trying to regulate it on the basis of speculative principles should be out of the question. Similarly, the sailor sees that a needle points to the North, and that should be enough; a philosopher wants to know the mechanism proposing various solutions thereby chasing maybe's. The philosopher's reference to "pores on the spiral line" to explain the behavior of the needle Pluche found unconvincing (570).

Studying man is not without limitations. The mechanism of motions of the body is of the higher order and God reserved to Himself the movements of the body and of the entire universe which are done without our part except of willing them or observing. We don't have to study anatomy to be able to walk (S 5.137-138). What Pluche seems to say is that knowledge of anatomy as such can be quite useful at least in the context of medicine; however, the mind-body problem is at least obscure if not impenetrable. Can science really explain how the mere act of will translates into physical motion of, say, a hand? Even today, this is a rather challenging area for science. Thus, in Pluche's view, reading Locke's *Treatise of human understanding* will not help in making sound judgments. The ignorance of human duties is shameful. The inability of going beyond the limits set by God is not (144).[6]

Man is on earth not to know the foundation of God's work, but to appreciate it through his work and government. Man is not born a philosopher, but a laborer, and wisdom lies in joining virtue to work (H 2.405). The goal of research is not to distinguish ourselves by profundity of our knowledge or to gain detailed knowledge of nature. Such knowledge would only be a distraction leading to idle speculations. "The purpose of all advices that the Savior gives us is to make us work with perfect confidence in the providence of the heavenly Father and to encourage us to the service of our brothers" (407-408).

Thus, the recognition of the existence of epistemological limits is only an encouragement not to waste time and effort to investigate something which will not lead anywhere. If results are obtained only by speculation, they are without value. Observation and experiment should be the way of arriving at knowledge of any use. However, the determination of the limits that should not be crossed is not necessarily easy. Pluche said that what God hid from humans is not always inaccessible for them. When God allowed for us to

[6] Pluche's approach was "crossconfessional, with its emphasis on the limits of reason and its call for humans to exercise their divine gifts (of reason and of the utility and bounty of nature) simply, without arrogantly delving into the internal structures of God's work that are inevitably beyond human capacities for understanding," Ann BLAIR, "Noël-Antoine Pluche as a Jansenist natural theologian," *Intellectual History Review* 2016, 26: 94.

catch a glimpse of something it was to incite in us the desire for more perfect knowledge (S 3.101). That is, the awareness of obscure or even hidden elements of nature should serve as an encouragement for the scientific pursuit, but only if observation and experiment can bring to light what lies now hidden.

3. UNIVERSAL TELEOLOGY

The smallest things have their reason in nature; God can be found "in the structure of the leg of a fly just as in the structure of the sun itself." On a large scale, God created the sea salty since without salt it would be pernicious instead of serving us (S 3. 192-193). Salt conserves purity of water (195). Salt moderates evaporation (196). God did not create the sea to separate peoples, but to unite them, as the example of Holland shows, to compensate for what they lack and to facilitate the transport of cargo (211).

Every time such a reason is found, it becomes the reason to admire and glorify God (S 1.152-153). Even apparent contradictions can be teleologically explained, for instance, a contradiction between birds having beaks and their prey having numerous ways to evade them. Supreme wisdom intended it as a means "to bring the entire nature in action and in exercise. All animals occupy themselves with attacks and with defense: nature gave to all of them tools for offence and for defense" (42).

Some aspects of nature should remind people of important religious elements; after all, "our only master" used an example of a seed that dies when planted to give life (S 1.57). For instance, changes in some insects (emergence of butterflies) evoke images of resurrection. At one stage of its development, insects truly die to be resurrected/transformed into full insects (36). "Their end is the beginning of the new order of things. When a maggot is dead, it becomes a fly." Maggot carries an embryo of the fly, but it is a fully developed entity and it is destroyed to give room for the fly and "it is not afraid of this kind of death which is for it a passage to the more radiant state" (36-37).

Most importantly, nature was created for humans: "the entire earth is for our service." It is good to investigate what we possess (S 2.viii). "Everything is connected in nature and although each thing has a particular end or corresponds to something else, we see all of them ultimately in relation to man. They reunite themselves in him as their center; he is the end of all since he is

the one here who can use it all." Only man has an eye that can be delighted by flowers which were made for him (3). "Giving man the verdure of the earth, God perpetuated his gift for all ages by the commission he gave to Flowers to renew each plant from year to year by giving it the fertile grain." So, God so created flowers that they are useful for procreation and are pleasant to look at considering their form and colors. On the other hand, consider the root that have no finery/adornment (5-6).

Bees produce delicious honey for humans to use, but their role in human life does not end there. A beehive is a school to which people should be sent. Prudence, industry, love of neighbor, love of public good, love of work, economy, propriety, and temperance are virtues which can be found among bees (1.179). All bees work for the common good; all obey the laws, not wanting to change their station. They are free since they depend only on the laws (180).

Domestic animals have been created especially for humans which is shown by their disposition that made domestication possible (H 2.370).[7] "They like more human house than their own liberty" and "they love us naturally and by themselves they offer us their services since they never go away from us," thereby truly being "one of the best gifts of God" (S 1.332). And ferocious animals? They were created "to animate all nature and to exercise and punish man when he became a sinner" (333).

As to animals, generally, "to live and obey us, that is all what they know" (S 3.498). A half of animals have their independence, but humans can use them, too (499). "It is man that is their [animals'] end; man would cease to be served if animals were rational [in which case] all would be turned into disorder on earth": rational animals would cease to serve man (500); they would want to be free (501).

It is easy to plant flowers, but to plant wheat requires hard labor. Shouldn't it be the other way around? (S 2.266). The first reason for planting flowers is to take pleasure from them, to amuse oneself. This pleasure would be undermined if it required hard labor to grow them (267). However, man is not supposed just to enjoy what is on earth. "God made man feel that he made him the master and king leaving to his industry the honorable care for regulating, reforming, and improving" (286). Man has to work to cultivate

[7] A case is made that "the observation and control of animal bodies served as a tool for disseminating new theories of government that focused not on the sovereign's laws and orders nor on the roles of nobles and courtiers, but on the art of rendering bodies productive." Elisabeth WALLMANN, "Noël-Antoine Pluche's *Le Spectacle de la nature, ou, Entretiens sur les particularités de l'histoire naturelle* as an instrument for the government of bodies," *French Studies* 2018, 72: 366.

wheat. “This is here more than anywhere else that God averted laziness by need and although only he gives growth to what man planted and cultivated; he prefers to hide his gifts and his benediction under the shadow of work of man rather than to make him idle and indolent” (320).

“Man is born to work” (S 4.17). He needs rest and God provided night for his sleep (18). Night comes gently, gradually, so man can prepare for his sleep (19). The night also provides silence by sending to sleep domestic animals and birds. The night “assures the rest for the King of nature” (20).

How far does human-centeredness of the world go? What if there is life in other worlds? Stars are globes of fire, just like the sun. According to Pluche, they have been created for humans, as decoration of the sky; however, they also lighten other worlds (S 3.482), so, apparently, they have been created for the benefit of the inhabitants of other worlds as well. Each planet enjoys the gift of the sun as though it were made just for this planet (503), and the same could be said about the stars. Incidentally, the supposition that there are other intelligences does not hurt the majesty of God (4.499); quite the contrary, it shows the wisdom and power of God (3.482). Pluche was confident that if there were inhabitants in other planets (473) or around other suns, God would communicate His wisdom also to them (474).

This human-centeredness is justified by the fact that humans were created in the image and likeness of God. Man resembles God by his intelligence and his dominion (S 5.26).[8] The greatest honor given to man by God is to be an inventor and orderer (126). From human hands come things for which there are no models on earth: mill, rifle, clock, etc. Man imitates God by introducing what was not there before. Like God, he is always active. Like God, he protects and renews his productions. Like God, he repairs what is damaged, reestablishes order when it is undermined. However, man does not create, create out of nothing, that is; he arranges what exists (127). Man works and work is the principal foundation of human grandeur (128), from which stems Pluche’s strenuous criticism of idleness as a social problem.[9] The work of man apparently includes education since in education man is truly an image of God since he imitates intelligence – apparently, divine intelligence is meant here – in fashioning the body, the ideas, and the inclina-

[8] It is observed that in his explanation, Pluche “showed himself to be a child of the prevailing Enlightenment. Man was the image of his Maker, according to Pluche, because he was destined to control nature and to use the world as a source of enjoyment.” R[obert] R. PALMER, *Catholics and unbelievers in eighteenth century France* (New York: Cooper Square Publishers, 1961 [1939]), 107.

[9] See also André VIALA, “Les idées de l’abbé Pluche sur la société,” in: *La Régence*, ed. H. Coulet (Paris: Armand Colin, 1970), 313-316.

tions of children (S 6.52). By the imitation of fashioning the body Pluche seems to have meant the act of creation when God did not create man out of nothing, as the rest of creation, but He used a mass of earth to create man; He made a beautiful statue which was lifeless for a while and then infused it with the breath of life (5.18).

In all this strong emphasis on teleology and anthropocentrism, Pluche was rather reticent in respect to the question of theodicy. If God has His providential hand in everything, how can one explain evil? Pluche's general answer rather briefly stated was that "it is unreasonable and indecent to justify the conduct of God. It does not need our apology. His wisdom and his liberality shine from all parts and the difficulty when we try to discover the goal of some of his works shows us the limits of our intelligence and not the limits of his goodness. That that we have seen in the spectacle of nature should convince us that man is the real goal of all that God put on earth even in what seems to us to be harmful. What we call evil is often a veritable good and almost always this is a motive or an occasion for some virtue [that is] more advantageous than indolence and rest. In all this God wants to enrich, exercise, and instruct us" (S 3.491-492). Only occasionally did Pluche touch upon specific cases. For example, we learn that the destructive worms prepare matter for the creation of something and thus they are useful (490). Storms are not only to instruct us; they also radically improve air spoiled by stagnation. They also kill overpopulation of insects and bring water (267-268). Volcanoes that are viewed as scourges are in God's design true salvation since they allow for the release of pressurized gases which otherwise would cause earthquakes (270).

The teleological character of nature makes it the veritable spectacle[10]: God is the author of the play which He displays on the universal scene and

[10] The phrase "the spectacle of nature" was apparently popularized by Pluche by the title of his work, but histrionic references to nature were not unusual. For example, Fontenelle in the first evening of his *Discourses on the plurality of worlds* (1686) said that "Nature is a grand Spectacle which resembles [the spectacle] of the opera." Joseph Addison said that "the whole universe is a kind of theatre filled with objects that either raise in us pleasure, amusement, or admiration," [1712], *The Spectator with the sketches of the lives of the authors* (London 1797, vol. 5, p. 258). Shaftesbury spoke about glorious nature whose "every single Work affords an ampler Scene, and is a nobler Spectacle than all which ever Art presented." Anthony SHAFTESBURY, *Characteristicks of men, manners, opinions, times* ([London] 1727, 345). In "Die Alpen" (1729) and in the early version of his "Gedicht über die Ewigkeit" (1736), Albrecht von Haller spoke about the "Schauspiel dieser Welt." "The spectacle of the universe" was mentioned as a guide to God of much lesser importance than the idea of charity (*bienfaisance*) by Étienne-Gabriel MORELLY, *Chode de la nature* (Part-tout: Chez Le Vrai Sage 1760 [1755], 144).

the more spectacular this spectacle is, the better the divine authorship can be seen and the more humans can appreciate what they see and can use. Rivers, forests, verdure, and fruits tell us about the Author of our goods. The voice of thunder will trouble those who abuse these goods and if the lightening saves them, they are at least warned. God did not put anything around us that does not speak about Him and that by the character of goodness does not invite us to love Him or that by the frightful appearance does not force us to fear Him (267). "If the view of so many benefits/favors doesn't lead us to the one who is their Author, it is because of our criminal indifference or a distraction as much as blameworthy our ingratitude" (466). "Religion and reason agree in making us attentive to the language of Heavens, of the earth, and of the entire universe to make us hear the public sermon announcing everywhere the glory of God and to make us see his invisible perfections in the works of his hands. The view/survey of Nature is thus popular theology" (468).

4. MOSAIC PHYSICS

In Pluche's opinion, the comparison of the primordial universal chaos of philosophers and of Moses only shows the truth of the latter (H 2.4). Matter in violent motion can create chaos, not the world. "Only the special will of a worker, not a simple motion, can form the entire machine and each of the pieces that compose it" (9).

All that is in the world is a combination of various kinds of matter, simple elements that God created. These basic elements have been created once for all and no physical power or cause can generate them nor destroy them. In this, Pluche went well beyond the classical four elements.[11] Thus, except for water, fire, air, and earth, elementary substances include all metals (H 2.94), oil (82), salts (86), and sand (87, 552). Elements such as gold, water, metals, when shaken or mixed keep their integrity, do not decompose (11). Alchemists would say, we do transform some metals into other metals (15). However, they don't really destroy and revivify metals (18). Dissolved metal will always come back as the same metal. For example, cinoper/cinnabar in the crucible has all its pores filled with silver, which makes it appears as though it turned into silver (22). By the immutability of elemen-

[11] Pluche referred to Anaxagoras' homoiomeries as similar to his basic substances (H 3.113), but homoiomeries were really compound substances. Cf. Adam DROZDEK, "Anaxagoras and the everything in everything principle," *Hermes* 2005, 133: 166, 171.

tary substances God "prevents the universe from perishing. He provides limits to the changes that happen there in the way that the world constantly changes and [yet] it is always the same" (51).

To back up his contention, Pluche referred to some published experiments showing immutability of some substances (H 2.96, 99). "Chemistry that uses natural agents cannot go any further than the force of these agents allows it and is limited to unite or to decompose the natures [already] made, but it can neither destroy what exists nor change it into what does not exist, nor produce one grain of a new nature"; or, in the words of Boerhaave, *chemia adunat vel separat, nec datur tertium facere quod possit* (101-102). Motion cannot make anything new and the nature of elements is inaccessible to our intelligence (109).

With the Biblical account of creation, of particular importance for Pluche was the status of light. As the book of Genesis states, light was created before the stars and the sun. This has always puzzled interpreters of the Bible: what was the source of this light? According to Pluche, light was yet another elementary substance and "the nature of light is an inconceivable marvel, a true abyss in which our spirit does not play any other part than admiring and adoring" (H 2.70), a "nature superior to our intelligence" (66). The second Pluche's concern was the sustainability of the energy of the sun: assuming that the sun is the source of light, the sun would exhaust itself shining for 6000 years (S 7.61), the then accepted age of the universe and, thus, a person has to be more than credulous to believe in the luminous body in the middle of the solar system that constantly emits new luminous substance.[12] On the other hand, light is always around us, he maintained, just like air, and it is ridiculous to say that light comes from the sun at each moment just as the bell does not produce air hitting the ear (H 2.355).

Light is an intermediate fluid that fills the entire universe and without changing place it transmits the actions of the sun (S 4.93). Light is always around us, but it has to be shaken by the sun or a lamp. This fluid is pushed by the sun or flame, so it could have been created before the sun (94). Flames, flames of the sun in particular, cause waves in light-fluid thereby making it visible (103; 7.61). Terrestrial fire is a different element than light and God put this fire just for us in the lowest layers of air and in the outer crust of the earth, and it does not owe its existence either to the sun or to light; the sun only gives an impulse to fire through the means of light-fluid

[12] Pluche was not altogether wrong, but his timeline was all wrong: by today's understanding, the sun will exhaust itself in billions of years rather than mere thousands.

which is between the sun and fire. Light is real fire or celestial fire that can burn (4.197). God created terrestrial fire just for the preservation of the human race (198). To show that light and fire are not the same, Pluche provided some examples. Light can be warm in a dark place (198). Ample light can come from the moon with no warmth. When climbing a high mountain, thereby getting closer to the sun, it gets colder rather than getting warmer (199). If light were the same as fire, they both should decrease or increase at the same time (201).

Elements can permeate one another to make the resulting compound substance useful. Light is the finest body; it traverses any body. Fire is not as fine but fine enough to traverse any body without decomposing it. There are only three "veritable fluids" in nature: light, fire, and air; light is universal; the other ones are close to earth (S 4.260). Oil, mercury, salt, and water are fluid only "by loan" (*par emprunt*), only to the extent that they contain fire (261). Air without fire would be intolerable, earth without fire would become heavy (207), and water without fire would turn into ice (207, 3.538). God also enclosed fire in a special manner in grease and in oil. Such a reservoir of fire can be easily transported (4.227). This is a magnificent gift but humans admire in this their dexterity instead of "the intentions of their benefactor" (228). Fire that gets out of oil makes plants grow; also, fire in blood makes organisms alive; constant breathing supplies it from air (229); today we would say that blood becomes oxygenated in the lungs to carry oxygen to all cells of the body to enable cellular activities.

The reason why Pluche introduced scores of elementary substances as foundational elements of his physics was to combat, on the one hand, atomism, on the other, randomness.

If there are only atoms, even in variety of shapes and sizes as advocated by the ancient atomists, how can properties of bodies be explained? Light, although in static form is invisible, becomes visible when activated by fire because the visibility of light is already there as its primary attribute if only in the dormant state. Can the shape and size of atoms account for this property? Since, in Pluche's mind, the richness of the properties of the physical world can hardly be explained by atoms and atomism is rejected as the "ruinous foundation"; incidentally, for the same reason, the peripatetic prime matter is also jettisoned (H 1.xiii). Even if, like for Gassendi, the existence of atoms is attributed to God's act of creation, atoms are insufficient to explain "perpetual changes of the world" (2.169) and atoms "cannot form the elements or the simple bodies whose nature is determined and absolutely in-

variable" (170); that is, the substance of fire would not be permanent since, as made out of atoms, it could always dissipate.

However, Pluche was not always altogether strict about completely rejecting atomic structure of matter. For example, he said that no atoms are needed "to say that a mass of gold is a bulk of particles (*parcelles*) of gold [that are] close together and that these particles are a primordial nature"; and thus, Epicurus' atoms are ridiculous (H 2.172), and Gassendi's atoms dishonor reason (173). Pluche spoke about "particles of iron" attaching themselves to a knife in the process of extracting iron from clay (S 4.552; cf. H 2.27, 32), about particles[13] of silver and copper (H 2.19), gold (29) and of metal (25), air (71), salt and earth (85). Likely, he meant just a portion of silver, etc., a small part of something, as in his thought experiment of particles of marble that "pulverized themselves more and more" in a tossed about barrel (224). This also may explain the phrase, "the smallest particle of fire" (59), whereby a large particle of fire is conceivable. In fact, he did investigate the problem of the size of the "grain of light" (S 4.104-106). On the other hand, does the smallest particle mean that there is a level at which a small mass of fire cannot become any smaller? Would that be any different from an atom of fire? Also, when stating that light is a subtler substance than fire, where does this subtlety come from if not from the size of particles of light that are able to permeate any other substance? If a substance does not have an atomic structure, it should be infinitely divisible. How would infinite divisibility explain various levels of subtlety and roughness of substances? It appears that in Pluche's physics such questions should not be asked. After all, God did not reveal the nature of heaven and earth and metals (H 2.348), we don't know what are gold, silver, etc. in themselves (94) and, by extension, any elementary substances; thus, the nature of their subtlety or roughness will remain unknown to humans.

The second reason of his rejection of atomism was its reliance on randomness. Atoms move randomly and out of this random motion everything emerges. Theoretically, atoms could be moved by God who would thereby impose an order on their motion leading to orderly emergence of orderly physical entities, but not in atomism. Pluche just marveled, how it can be that out of a mass of randomly moving atoms striking one another anything could be formed from a simple entity to something as complicated as the human body. "The whole has been made by chance. The whole continues,

[13] Except for *parcelles*, Pluche also spoke about *globules*, *corpusculles*, *molécules*, and *bulles* of various substances.

and the species are perpetuated [to be] the same by chance. The whole one day will dissolve itself by chance." Many would ask, Pluche said scathingly, are there any people who would spell out such silliness? (H 2.168). If so, a doctor should be sent to such people; alas, "the malady of this kind of philosophers is a gangrene beyond the power of medicine" (169) and such systems are just invented in asylums (*petites maisons*) (168).

Interesting is Pluche's comment on Psalm 18[19] and its treatment of the earth as though it were flat and the sky as though it were a tent. He said that "the spirit of God agreed with ideas of all people. He did not dictate the Sacred Books to make us Physicists, but to mold our hearts into virtue" (417).[14] On the other hand, Pluche took the Genesis creation account literally. It seems that a matter-of-factly description in the Genesis was an indication for Pluche to take it as historical account. However, the clearly poetic language of Psalm 18[19] (and other psalms) indicated that the description of the sun, the heavens, and the earth should not be treated literally.

5. MONOTHEISM AND IDOLATRY

Pluche devoted considerable attention to the problem of the origin of religion and religious rites. For Pluche, monotheism was the original religious faith and idolatry was a later religious development, a perversion of monotheism, the perversion which stemmed from "the abuse of language of astronomy and of figures of ancient writing" (H 1.3), and Pluche presented at length in the first volume of *The history of the heavens* the process leading to this abuse.

Since both the Jews and pagans made sacrifices (H 1.5) and they both buried their dead, some said that pagans imitated the Jews, but some said that the borrowing went in the opposite direction (6; S 4.287, 8-1.297). However, both opinions are false, according to Pluche (H 1.6). Similarities come from the preservation of older customs by the family of Noah (7). We see Noah making sacrifices after stepping out from the ark and the practice surely goes back to the times before the flood, to the sacrifices of Abel. Also, the patriarchs buried their dead before the times of Moses (8). Moreover, assemblies of people gathered to praise God is a universal event (10).

[14] [Noël-Antoine] PLUCHE, *Harmonie des Pseaumes et de l'Evangile* (Paris: Frères Estienne, 1768 [1764]), 417.

The moon regulated the affairs of society and of religious assemblies, the phenomenon found in the Noah's family and in the first inhabitants of Chaldea who gave names to the twelve stations or houses of the sun – the Zodiac (H 1.17; S 4.297). The names were given according to natural phenomena, e.g., the fury of lion marks the fury of the sun when it leaves the sign of Cancer. After the Lion, the Virgin holding a sheaf of grain expresses the harvest of this month (H 1.20, 26). There are different times of sowing and harvest in Egypt (22)[15]; thus, the names of the Zodiac signs were not invented in Egypt, but the names from before the settlement in the Nile had been used (24). The inundation of the Nile has been of critical agricultural importance in Egypt. Its beginning was when the sun entered the sign of Lion (41), which was signaled with the appearance in the morning of the Dog star – since it warned about inundation like a dog about a thief, also called a barker, a monitor – Anubis, the Nile star (Sirius), or Thot – a dog (42; S 4.307). The cross was used as a symbol of the Nile's swelling beyond its borders (H 1.57, 91). Vases with symbols on them were used to show the level of water in the Nile (58). Particular winds were also important and avian symbols were used for some of them: the hawk symbolized the wind from North to South, the whoop – the wind in the opposite direction (49).

Symbols had been used to preserve important truths. In Egypt, to signify God, not fire was used, but a circle or rather the sun (H 1.63). The Egyptians added some attributes to existing symbols to signify various perfections; for instance, two points of flame or two serpents signified the fact that the Supreme Being was the author and the preserver of life. Serpent signified life since the same word was used for serpent and for life (64). The banana tree or leaves of this tree added to the circle signified the fecundity of the Providence (64-65). The sun, the most prominent celestial body, was chosen as the symbol of the omnipotent Being and the sun-symbol was used in the symbolic writing as the symbol of this Being (67) and Osiris was the name given to the sun. The name indicated the king, the government of the earth and later Osiris was represented as a human figure with the scepter (68; S 4.306) indicating the duration of the solar year since this annual revolution regulated the entire nature (H 1.68). For the figure of earth that nourishes all things, the figure of a motherly woman was chosen with the name of Isis (75; S 4.307). She was represented with various attributes to represent various things. For instance, a crescent on her head indicated the religious assembly at the new moon and the full moon on her head indicated an assembly

[15] The disparity is due to the precession of the earth, see also H 2.483.

in the middle of the month (H 1.80). The type of work in the field depended on the time of the year – thus, on the sun – and on the earth. After the sun and the earth were represented by human figures, work was represented as Horus, a child of Osiris and Isis (82) and Horus changed his attributes and also his name according to celestial signs and particularities of seasons always being connected to works of society (93).

All this, in Pluche's mind, indicated that the figures of Osiris, Isis, Anubis, and Horus were not real people who were divinized, as commonly assumed at the time – the view that goes back at least to Euhemerus – nor gods but "the letters of an ancient alphabet or the public posters by which it was suitable to inform people about the state of the sky, the order of holidays according to seasons, and about the order of works of the year" (H 1.102). The need to personify objects so that they could be painted introduced a usage of allegories and fables. Symbolic figures were used for mental objects and that led to fiction. Some truths were expressed by figures which led to ceremonies with objects and names having meanings (110). Figures signifying what people owe to God and to themselves were taken for real people and honored as capable to provide goods (S 8-1.296). The same happened with animal figures. Animals honored in various places were originally simple symbols, ancient symbols of the Zodiac and various symbols of the position of the sun. Instead of a painting, an animal was presented for a holiday in a particular month (H 1.121). Similarly with divinization of objects, the sun in particular. "It is not at all the admiration of the sun which led, as it is said, to the adooration of the sun instead of its Author. The spectacle of the universe never corrupted people" by turning them away from the providential "engine of all"; "the study of heaven and earth never led to the emergence in anyone of a strange idea of putting in the stars the dead heroes and entrusting them the rule [over people]" (131). The symbolic writing by an abuse caused by "the blind cupidity" is the source of evil (3, 131, 138), also by the pride of reason that wants independence, by the love of pleasure (S 8-1.280, 298), and by the ignorance and superstition of priests and their "infatuation with systematic reveries" (H 1.395). They started to see in depicted symbols people or animals; "they stupidly limited themselves to the figure that was before them" and forgot about its meaning (141). God was the meaning of a circle, the sun was its physical representation. People directed their prayers to the eternal, the being, the father of life; however, gradually, people started to apply these titles to the sun itself. God was confused with His creation (142). Figures that had the sign of the sun became themselves worshipped (143).

Egyptians eventually considered Osiris to be a man, Isis a woman, Horus their literal son, perverting the usage of symbols since "symbolic man is not at all used to signify a [real] man. … They took these figures literally and considered them to be monuments of their national history," and so Osiris was considered the father of their colonies (144). Thus, the Egyptians worshipped the sun in place of God and considered Osiris to be their forefather but also considered Osiris to have a relation to the sun, and gradually the sun's divinity was transferred to Osiris (145-146). Isis turned into the queen of heaven and of earth (152). Idolatry spread from Egypt, the most fertile country (168). They thanked the sun for this fertility and other peoples thought the Egyptians were rewarded so for their piety (169). Phoenicians who travelled everywhere spread this Egyptian idolatry (170; S 4.312). Greeks and Orientals took over their mythology from Egyptians (H 1.252). Also, the fact of the sun's passing from one sign to another was the origin of a ridiculous belief in transmigration of souls brought by Pythagoras to Italy as a rare discovery (362).

"There was nothing less mysterious than the religion of the Egyptians at its beginning. It was originally the same as the religion of Job and Jethro in Arabia, of Melchizedek in Canaan, of Abimelech in Palestine. It was, in a word, the religion of Noah, of the Patriarchs, his children, the authors/ founders of the first colonies. This religion consisted in the adoration of the Most High. Justice and work were recommended there; the dead were honorably treated there; the best future was expected there"; figures presented in public were supposed to instill in people "duties toward God, advantages of peace and the sweetness/gentleness forward brothers, the reward of justice after death," and the order of festivals and of work (H 1.388). When symbolic figures presented during religious assemblies were taken as representations of real people, an idea arose that people were protected by ancestors living among the stars (389). At first, priests tried to retain the original meaning of religion being committed to "one God, the author of all their goods" (392), but, eventually, they were themselves convinced as others about their ancestors in the stars who rule over the sun, the moon, and nature (393-394).

The original religious festivals included elements representing motions of the earth caused by the flood, changes of air and seasons, the loss of ancient abundance, and the difficulties for tillage to overcome (H 1.408). Also, they were supposed to teach people how to eat and clothe, to treat one another with gentleness, and to live in peace assured about the fate after death (403).

All of it was lost. Various stories were invented to make sense out of the elements of festivals, such as the story of Ceres – an import of Isis (405) – and her cries for her daughter Proserpine. Festivals were originally the results of piety or the means to animate it, but later they were considered the source of merit and multiplying them was considered the sign of devotion. More merit was attached to them than to justice and piety leading to ceremonial life (413-414). They did not honor God nor help others nor made humans better or society happier. Devotion became artificial (415). The original intention of rural festivals was the glorification of the supreme Being, the unique intelligence guiding the universe; the annunciation of the order of the year; the order of festivals; and the recommendation to observe the swelling of the Nile (419). The first form of worship was "the worship of the Most High, the supreme Being, the father of life"; people did that together in assemblies, they made offerings (420), honored the dead, knew justice that was the discernment between good and evil, and believed in the afterlife. Many additions were made afterwards. Cupidity led to treasuring this life more than the next, the meaning of old symbols was lost, and belief in the gods arose (421), also, the worship of real animals and the belief in metempsychosis (422). Priests invented explanations, and philosophical systems were created based on these inventions (423). The religion of Egyptians is "the religion of patriarchs depraved by extravagant additions" (424) and this deprived, idolatrous version was exported to other parts of the world and was followed by various outgrowths such as astrology, necromancy, oracles, and the use of talismans. Idolatry allowed to exist in seduced hearts the remnants of the acknowledgment for the received favors and religious fear of justice that punishes crimes. Astrology, however, ruined all virtue replacing it by superstitious formulas and puerile practices, and convinced criminals that their crimes were caused by the stars, thereby appeasing their conscience (458).

By his theory of the origin of idolatry, Pluche wanted to refute the statements of deists: John Marsham, John Toland, and John Spencer, who used the antiquity of Egypt to submit Judaism and Christianity to criticism.[16] They said that in respect to their culture and religion, Jews were indebted to the Egyptians and that Moses was a crafty politician who took over religion from the Egyptians. Their religion was thus of the human provenance, whereby divine revelation of the Mosaic law was rejected. And because the New Testament relies on the Old Testament, the divine character of the Gospel was put into question. In Pluche's arguments, there is one common

[16] Cf. B. de BAERE, *Trois introductions*, 73-80.

source of religious belief, the monotheism that goes back to the times before the flood. The true religion was at the beginning. Then, by gradual deterioration, monotheism was discarded, polytheism and idolatry became established religious system – and that started in Egypt and then permeated the rest of the world. Only the Jews retained the monotheistic faith. By defending the primacy of monotheism, Pluche was a forerunner of the idea of Urmonotheismus, the primal monotheism, developed on a large scale in the 20th century by Wilhelm Schmidt.

For Pluche, a Catholic priest, the truth of monotheism was indubitable, but although faith trumps reason, reason must not be dismissed, and the many volumes filled with the most recent scientific research are a testimony to the fact that reason can confirm what faith already knows. Except for the inhabitants of the *petites maisons*, it should be enough for people to see the truths of faith written into the structure of the universe. The investigation of this universe, as much as the observational faculties, allows humans to pursue what is interesting on its own right, but, inevitably, admiration of the wonders of the animate and inanimate nature will lead to its Author. For this reason, Pluche called physics the school of piety (S 4.277). "The entire universe is full of magnificence and the wisdom of its author. The smallest grain of gold or of earth proclaims his glory just as the heaven with all its lights that embellish it" (H 2.112). Because of this inevitability, Pluche saw as his task to encourage particularly the youth to looking closely at the world around, whereby the admiration of the divine Author should naturally follow. That Pluche was successful in this encouragement is testified by the immense popularity of his work.[17] He could only hope that the interest in nature he incited did not end in nature, but also led to the enkindling of the religious sentiment.

BIBLIOGRAPHY

ARMAND, Guilhem. "Le Spectacle de la nature ou l'esthétique de la révélation." *Dix-huitième siècle* 2013, 45: 329-345.

[17] The many educational aspects of the *Spectacle* have been presented by Koepp with the conclusion that to read this work "is to know what pioneering book it actually is: in natural history, in pedagogy and experiential learning, in science, technology, the manual arts and crafts, and in the encyclopedic tradition itself," Cynthia J. KOEPP, "Curiosity, science and experiential learning in the eighteenth century: reading the Spectacle de la nature," in: *Childhood and children's books in early modern Europe 1550-1800*, eds. A. Immel, M. Witmore (New York: Routledge, 2006), 177-178.

DE BAERE, Benoit. *Trois introductions à l'abbé Pluche: sa vie, son monde, ses livres*. Geneve: Droz, 2001.

BLAIR, Ann. "Noël-Antoine Pluche as a Jansenist natural theologian." *Intellectual History Review* 2016, 26: 91-99.

CHASSOT, Jean-Fabrice. *Le dialogue scientifique au XVIII^e siècle. Postérité de Fontenelle et vulgarisation des sciences*, PhD diss. Paris: Sorbonne, 2008.

DROZDEK, Adam. "Anaxagoras and the everything in everything principle." *Hermes* 2005, 133: 163-177.

KOEPP, Cynthia J. "Curiosity, science and experiential learning in the eighteenth century: reading the Spectacle de la nature." In: *Childhood and children's books in early modern Europe 1550-1800*. Eds. A. Immel, M. Witmore, 153-180. New York: Routledge, 2006.

PALMER, Robert R. *Catholics and unbelievers in eighteenth century France*. New York: Cooper Square Publishers, 1961 [1939].

PLUCHE, Noël-Antoine. *Le spectacle de la nature*, vols. 1-8. Paris: Freres Estienne; Paris: Veuve Estienne, 1732-1750.

PLUCHE, Noël-Antoine. *Histoire du ciel*. Paris: Veuve Estienne & Fils, 1748[2] [1739].

PLUCHE, Noël-Antoine. *Harmonie des Pseaumes et de l'Evangile*. Paris: Frères Estienne, 1768 [1764].

SEIDENGART, Jean. "Le 'système du monde' de l'abbé Pluche dans son 'Histoire du ciel'." In: *Écrire la nature au XVIII^e siècle, autour de l'abbé Pluche*. Eds. F. Gevrey, J. Boch, J.-L. Haquette, 327-345. Paris: PUPS, 2006.

VIALA, Andre. "Les idées de l'abbé Pluche sur la société." In: *La Régence*. Ed. H. Coulet, 307-316. Paris: Armand Colin, 1970.

WALLMANN, Elisabeth. "Noël-Antoine Pluche's Le Spectacle de la nature, ou, Entretiens sur les particularités de l'histoire naturelle as an instrument for the government of bodies." *French Studies* 2018, 72: 364-379.

NOËL-ANTOINE PLUCHE I SPEKTAKULARNOŚĆ PRZYRODY

STRESZCZENIE

Artykuł przedstawia poglądy abbé Pluche'a, którego książki były bardzo popularne w osiemnastowiecznej Francji. W *Spektaklu przyrody* i w *Historii niebios* chciał wzbudzić w czytelnikach zainteresowanie otaczającym ich światem, bowiem według niego przyroda jest księgą napisaną przez Boga-Stwórcę, a czytając ją właściwie, ludzie mogą zobaczyć opatrznościową opiekę Boga. Aby walczyć z atomizmem i przypadkowością w przyrodzie, Pluche wprowadził do fizyki szereg podstawowych substancji jako fundamentalnych elementów przyrody, z których szczególnie ważne było światło.

Pluche poświęcił wiele uwagi problemowi pochodzenia religii i obrzędów religijnych. Według niego monoteizm był pierwotną religią, a bałwochwalczy politeizm to jego późniejsze wypaczenie.

Słowa kluczowe: Pluche; fizyka; teologia; teleologia; monoteizm.