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JOHN RAY: “DIVINITY IS MY PROFESSION”

John Ray (1627-1705) became an ordained minister in year 1660, which was required for fellows of Cambridge University. In two short years, he refused to subscribe to the Act of Uniformity and had to resign from his Trinity College post.¹ He devoted himself to the investigation of flora producing numerous books culminating in the three-volume *Historia plantarum*. Ray became a preeminent botanist on the 18th century of the authority in the field comparable to Linnaeus'. After the death of his young friend and collaborator Francis Willughby, he took upon himself the completion of the work on classification in the area of ichthyology, ornithology, and invertebrates.²

¹ His decision was not justified as a matter of conscience; he only spoke about a distaste for oaths and the fear of consequences of making oaths, as richly documented by Susan McMahon, John Ray (1627-1705) and the Act of Uniformity 1662, *Notes and Records of the Royal Society of London* 54 (2000), pp. 169-170.

² It is not always easy to separate the contributions of Willughby and Ray in the resulting published work in these areas; see, for instance, Brian W. Ogilvie, Attending to insects: Francis Willughby and John Ray, *Notes and Records of the Royal Society of London* 66 (2012), pp. 357-372.

DIVINITY AND NATURAL SCIENCE

Before taking his priestly vows, Ray confided in a 1658 letter: “I must of necessity enter into orders, or else live at great uncertainties I am not resolved to enter into orders” and he was not quite happy about the prospect of abandoning his “beloved and pleasant studies” to devote himself “to the priesthood and take to the study of that which they call divinity.”³ Although in his time in the Trinity College he occasionally preached, he apparently was not thrilled by the prospect of becoming a priest and spending time on what he dismissively called “that which they call divinity.” At first, he likely treated his ordination as something to be done for convenience’s sake, i.e., to get a university position (as not a few university fellows had done), but, with time, it must have gnawed on him. He treated his Christian faith very seriously and the fact that he himself was a priest was not a small matter to him.

In a 1678 letter to John Aubrey, Ray wrote, “True it is Sir, that Divinity is my Profession, yet not lately by me undertaken, but before I left the University, wch is now more than 16 years agoe. The study of plants I never lookt upon as my businesse more than I doe now, but my diversion only; wch yet since I am not qualified to serve God & my generation in my proper function, I have been more bold to bestow a good proportion of my time on.”⁴

His research as a naturalist gave him a perfect opportunity to extend his work to the realm of theology. It was a topic already investigated by “the most learned Men of our time” (W [i]),⁵ however, it seems that stirred particularly by a couple of physico-theological

³ Robert W.T. Gunther (ed.), *Further correspondence of John Ray*, London: The Ray Society 1928, p. 16.

⁴ *Further correspondence*, p. 163.

⁵ References are made to the following books of John Ray:
 P – *A persuasive to a holy life*, London: W. and J. Innys 1719 [1700]
 T – *Three physico-theological discourses*, London: William Innys 1713 [1691].
 W – *The wisdom of God manifested in the works of the creation*, London: William Innys and Richard Manby 1735 [1691].

chapters in his friend's, John Wilkins', book *Of the principle and duties of natural religion* (1675), Ray ventured into writing an entire physico-theological book, *Wisdom of God* (1691), which became an instant success with the 12th edition published in 1759; the book became an inspiration to other fellow physico-theologians, particularly to his friend William Derham. Thus, he could write rather proudly in the preface to *The wisdom of God*, "By Virtue of my Function I suspect my self to be oblig'd to write something in Divinity, having written so much on other Subjects, for being not permitted to serve the Church with my Tongue in Preaching, I know not but it may be my Duty to serve it with my Hand by Writing: And I have made choice of this Subject as thinking myself best qualify'd to treat of it" (W [ii-iii]).⁶

Ray continued his work on the use of natural science for theological purposes in his next work, *Miscellaneous discourses* (1692),⁷ which is part of what may be called sacred physics (to use the title of Johann Jakob Scheuchzer's big opus),⁸ which is a scientific investigation of natural phenomena described in the Bible. For instance, the act of creation is of supernatural provenance, but how is it physically and biologically possible that plants could be created before the sun? Although the appearance of enough water for the flood to cover the entire earth with its highest peaks can be explained by God's creation of water for this occasion and annihilation of this water at the end of the flood – "this *Hypothesis* is not so absurd and precarious,

⁶ For the motivation to write *The wisdom of God*, see also Charles E. Raven, *John Ray, naturalist: his life and works*, Cambridge: Cambridge University Press 1950, p. 297; Neal C. Gillespie, Natural history, natural theology, and social order: John Ray and the 'Newtonian ideology', *Journal of the History of Biology* 20 (1987), pp. 40-41.

⁷ The second (1692) and following editions were entitled *Three physico-theological discourses* since the first two parts are printed as long digressions in the first edition.

⁸ It can also be called the divine physics (Andreas Rüdiger, Johann Friedrich Wucherer), Mosaic physics (Johann Sophronius Kozak), or Christian physics (Daneau Lambertus, Daniel Wülfer).

as at first Sight it may seem to be” (T 69) – can these phenomena be explained by physical laws?

He returned, however, to his purely naturalist work at some emotional cost. As he wrote in 1695 in a letter to Edward Lhwyd, even hoping that what he did is scholarly useful, “ I have one foot in ye grave, & I ought not bestow all my time & thoughts upon these enquiries.”⁹ It seems that *A persuasive to a holy life* (1700), a work suitable for his profession, as he described it in the first lines of the preface, can be considered a fruit of labours done to ease his conscience.

TELEOLOGY

With other physico-theologians, Ray believed that the most convincing argument for the existence of God is in “the admirable Art and Wisdom that discovers itself in the Make and Constitution, the Order and Disposition, the Ends and Uses of all the Parts and Members of this stately Fabrick of Heaven and Earth” (W 30). In the age when telescope and microscope tremendously extended the scope of the visible world, Ray saw the presence of God in the orderliness of the world at play at every level, micro and macro. Only by arrogance do people think that there are things in the world unworthy of their attention. “There is a greater Depth of Art and Skill in the Structure of the meanest Insect, than thou art able for to fathom, or comprehend. The Wisdom, Art, and Power of Almighty God, shines forth as visibly in the Structure of the Body of the minutest Insect, as in that of a Horse, or Elephant: Therefore God is said to be, *Maximus in minimis*” (180).

The main theological opposition were the atheists who by denying the existence of God had to believe that the world and everything in it was the product of accident, of random motion of atoms as already proposed by Democritus and Epicure and was poetically enshrined by Lucretius. To Ray, it was a wonder that there was “any Man found

⁹ *Further correspondence*, p. 262.

so stupid and forsaken of Reason, as to persuade himself, that this most: beautiful and adorn'd World, was, or could, be produced by the fortuitous Concourse of Atoms" (W 36). If the same number came out when rolling the dice, no one would be persuaded that this was by chance. How much more incredible it is that, for instance, the human body is made out of the same parts in the same places (239). The guide should be found in final causes, unjustifiably rejected by Descartes (38). In fact, using final causes is the best ways of proving the existence of God, otherwise, only the proof from the innate idea of God would remain (40).

Ray showed in scores of examples, many of them meticulously described, that there was a level of complexity in the makeup of natural elements and events that cannot be explained as the result of mere randomness and of the lack of forethought. In biology, he truly was "best qualify'd" to provide scholarly descriptions for theological purposes, but in other areas he relied upon the state of the art research: in physics, astronomy, geology, human anatomy and physiology, etc.

For some contentious issues of the day, he took effectively progressive positions. In biology, he argued against the spontaneous generation of insects and other creatures¹⁰ since spontaneous generation would amount to creation (W 300) and all species have been created during the six days of creation (T 173): "all Creatures are generated univocally by Parents of their own Kind," and "there is no such thing as spontaneous Generation in the World" as atheists believe (W 322).¹¹ He also said that the number of species is fixed,¹² by which he likely meant that no new species could be created (which rules out evolutionism), although he admitted that some species became extinct as testified by fossils of no longer existing creatures.¹³ He

¹⁰ W 298; *Further correspondence*, p. 56.

¹¹ In the title of one of his books, Ray used the phrase "spontaneously growing" plants, but in this case, spontaneity meant for him not being sown by men (W 326).

¹² Joannes Raius, *Historia plantarum* London: Clark 1686-1704, vol. 1, p. 40.

¹³ T 149, 172; John Ray, *Travels through the low-countries, Germany, Italy and France, with curious observations, natural, moral, topographical, physiological, & c.*, London: J. Walthoe 1738 [1673], p. 107.

argued against the Cartesian idea that animals were mere machines (W 56). He also argued against the idea of emboîtement that God created all individual animals that ever have been and will be (T 48): an egg in the female would contain a ready-made, minute offspring; a female offspring would have in her eggs ready made, even more minute offspring, etc. His heart was not in it, and yet, as to the idea of the preexistence of the foetus, he sighed, “I know not how to quit myself of it” (58).¹⁴

In astronomy, he sided with heliocentrism, but cautiously: the senses are not always reliable, e.g., the sun appears to be small, whereas, in reality, as then estimated, 160 times larger than the earth (W 65). Also, the Scripture “employs the usual Phrases and Forms of Speech ... without Intention of delivering any thing Doctrinally concerning these Points, or confuting the contrary” (195). However, to appease the pious, it can be stated that this is just a hypothesis “not altogether improbable” (196).

If final causes are most important, everything should be explainable in terms of reasons why particular entities exist. For instance, why winds? Winds prevent air from stagnation which could cause disease; they cool air; serve for navigation (W 90), power windmills (91). Why metals? “Without the Use of these we could have nothing of Culture or Civility”, agriculture, mechanical arts, money (96) which, in turn, enables trade. There is a danger of abusing money by greed, but money also allows for the development of arts and science and thereby elevating humans to a higher level (97). Why mountains? Because of mountains the surface of the earth (T 34) 1. looks beautiful by its variety (T 34; W 217); 2. mountains are useful for habitation screening from cold winds; they water the land maintaining vegetation (T 35); 3. mountains are good for some animals and 4. for cultivation; 5. they are the source of metals and minerals (T 36; W 216); 6. grass on mountains feeds animals; 7. mountains are the source of rivers and streams (T 37; W 215) and 9. serve as alembics to distil water

¹⁴ See also John G.T. Anderson, *Deep things out of darkness*, University of California Press 2013, p. 62.

to human and animal use (T 41-42); 8. mountains are boundaries between countries (T 42; W 220). Why the moon? The moon helps us to divide time, brings some light at night, regulates waters of seas so that waters are preserved from putrefaction making them good for fishing and navigation (W 66). Each element of the world can be scrutinized in this way; however, orderliness of the universe is found in the network of interconnections. For example, why fuel? “Fuel is good to continue Fire, and Fire to melt Metals, and Metals to make Instruments to build Ships and Houses, and so on. Wherefore it being true, that there is such a subordinate Usefulness in the Things themselves that are made to our Hand, it is but Reason in us to impute it to such a Cause, as was aware of the Usefulness and Serviceableness of its own Works” (W 160-161).

Ray combatted the traditional view that the world was created for humans. Not all creatures are created for man; they are created “to partake themselves of his [God’s] overflowing Goodness, and to enjoy their own Beings” (W 367). Each star is like the Sun and very likely a center of the local planetary system with inhabitants (18, 62, 171). Ray went as far as saying that there is an infinity of creatures outside the Earth and it was difficult to assume that all these creatures were created on account of humans (176).

A mixture of scholarly and teleological curiosity was in the case of fossils: what are they – products of nature or petrified organisms? – and what are they for? If they are the product of nature, they could have been made for adornment, like flowers – doubtful, though (T 124). “Nature doth some times *ludere*, and delineate Figures, for no other End, but for the Ornament of some Stones, and to entertain and gratify our Curiosity, or exercise our Wits,” as impressions of fern leaves on stones (125, 168). However, “contrary to the infinite prudence of Nature ... to design every thing to a determinate end” these fossils would be generated only for their form,¹⁵ which, apparently, is too fanciful to contemplate and could not be counted as nature’s playfulness. And again, “that Nature should form real Shells, without

¹⁵ John Ray, *Travels*, pp. 104-105.

any Design of covering an Animal, is indeed so contrary to that innate *Prolepsis* we have of the Prudence of Nature, (that is, the Author of Nature)”; it’s unbelievable and gives the ammunition to atheists about things existing by chance (T 132, 168-170). Also, why would nature imitate only shells and bones? (139). And so, fossils of shells and bones are petrified remnants of real animals.¹⁶

All these analyses show to Ray very clearly the providential hand of the Creator on each level of the physical reality. We can see “Accuracy, Order, and Symmetry in the Frame of the utmost minute Creatures, a Louse, for Example” (W58), notwithstanding the fact that a louse is “noisome and troublesome” (309). This admiration should go all the way down on the perceptual scale: “I might draw an Argument of the admirable Art and Skill of the Creator and Composer of them, from the incredible Smalness of some of those natural and enlivened Machines, the Body of Animals” (166), 8 mln in a drop of water, maybe even millions of millions (167). And we can go even lower, to the level of atoms constituting the basic elements of the physical reality (60). This reasoning is extended all the way in the opposite direction to the cosmic level: “for the Celestial, or Heavenly Bodies, the Equability and Constancy of their Motions, the Certainly of their Periods and Revolutions, the Conveniency of their Order and Situations, argue them to be ordain’d and govern’d by Wisdom and Understanding” (63). God is not only *Maximus in minimis* but also *Maximus in maximis*, better yet, *Supermaximus*.

THEODICY

However, there are some elements in the world which are difficult to reconcile with the goodness of God. Why are there so many insects, most of them apparently useless and some noxious (W 368)? So many – 1. to display the power and riches of God. 2. To “exercise the contemplative Faculty of Man” that is pleased with variety (369). 3. Some uses may be discovered in the future. 4. The multitude

¹⁶ John Ray, *Travels*, p. 110.

of insects secures the continuation of the species (370). 5. Insects are food for birds and animals, which, in turn, are useful for humans “not excepting their very Excrements” (371). 6. Some insects can be noxious to us, but good to other creatures. 7. Some venomous insects provide medicine. 8. They use their weapons when attacked (374). 9. God uses them sometimes as punishment. Consider the wisdom of keeping policing forces that include some “rude and insolent People” and yet they are necessary to maintain order (375).

Consider pain. Augustine said that pain is the greatest evil (P 17), with which Ray agreed; that’s why hell is presented as a burning fire, that is, inflicting pain (18). “Even Pain, which is the most grievous and afflictive thing that we are sensible of, is of great Use to us”: to quickly seek remedy of illness; makes us careful to avoid hurtful, for the most part sinful, things. God sometimes inflict disease for reasons “I shall not here enumerate” (W 244).

How about the purpose of “violent or tempestuous Winds and Hurricanes” (T 246)? How about earthquakes? We learn about a 1692 earthquake in Jamaica which is where lived “a most ungodly and debauched People,” which is a remark made “for the Vindication of the Divine Providence”; robbers were active when the earth trembled (as they did when Aetna erupted) (251-252); many people were brought to repentance and reform of their lives since “Fear is more powerful Passion than Love” (257). The judgment inflicted on Jamaica resembled the ones inflicted on the old world and on Sodom (258, 270). In Ray’s view, history shows that before any great calamity people were “universally vicious” and without any fear of God, who, not being an idle bystander, intervenes. So, the Jamaica earth earthquake “was the Finger of God, and effected perchance by the Ministry of an Angel” (271).

Generally, people receive more good than evil from God, but they overlook the good thinking as due to them and fix upon the pain which “for the most part is deserved” (P 61).

THIS LIFE AND THE NEXT

The recognition of the omnipresent of final causes leads directly to the Creator of the world and to the acknowledgment of His rule over the universe. If God is interested in the maintenance of order in physical nature, so much more He is concerned about the order in human life, on the individual and social scale. People should thank God for the perfection of their bodies (W 376), for its preservation (378). They should take care of their body not to damage God's work (379), and since vice impairs health, so they should lead virtuous life (381). They should watch their eye since through the eye the sin entered the world when Eve saw the fruit to be pleasing to the eye (384). They should bridle their tongue by avoiding lying (387, 389), slander, impure words (391-392), cursing, using the name of God in vain, scoffing (393-394). All of it has eternal consequences.

That the soul is immortal, was rather obvious for Ray (P 2, 62, 91). He did not make much effort to prove its immortality; however, he did mention in passing some such proofs.

An innate desire to be remembered by one's good name can be considered a proof of the immortality of the soul (P 80). The observation was made in the connection of encouraging people to lead a virtuous life (86) and thereby be remembered well after their death, at least to be good examples for others. The practical danger is, immortality or not, that if someone does not care what is said about him, the next step is not caring what he does and that may have unwelcome consequences for others (81).

An argument that has been frequently used as an explanation of the eternity of punishment could also be considered a proof of the immortality of the soul, the proof from the majesty of God. Every sin is aggravated by the dignity of the person against whom it is committed. "God is an infinite Person, and Sin being an Injury and Affront to Him, as being a Violation of His Law, an infinite Punishment must be due to it" (T 442). That is, the soul is immortal to make eternal punishment possible. This is for sinners. For the blessed, Ray said that desires of the soul are infinite and can be

satisfied only by an infinite God (P 91). At its face value, it is not a proof of immortality, but some similar proof had frequently been used: the desires of souls are never satisfied in this world. Good God could not have created souls so that they end up, effectively, unhappy; therefore, there must be life after death when the satisfaction of spiritual longings will be fulfilled.

The Christian religion speaks about the end of the world and Ray wondered how that can happen, settling for the already accepted conflagration. Christians saved the aethereal region from destruction (T 403). Fire will not reach other celestial bodies, but they may be dissolved by gradual decay (405). God will decide whether they will be destroyed by fire or something else. The world will be refined and purified, not annihilated (406). “The Restitution of the World seems more consonant to Reason than its Abolition” (411). The restitution includes the resurrection of the body, the resurrection of the just and the unjust followed by the last judgment (419). Consequently, there must be material heaven and material hell (411). However, if the saved are in the empyrean above the visible heaven and the damned in the middle of the earth, what about the rest of matter? (412). We may not know why God wants to restore the world. “There may be a new Race of rational Animals brought forth to act their Parts upon this Stage” (413). If not material, then spiritual beings can investigate the new world. We think too much about ourselves considering that the world was created only for us (414). Plants and animals will probably not be restored but new ones may be generated (415).

And the humans? Possibly, it will be “part of our Business and Employment in Eternity, to contemplate the Works of God, and to give him the Glory of his Wisdom, Powers, and Goodness, manifested in the Creation of them” (W 170). Eternal life will be active, particularly understanding, “the supreme Faculty of the Soul ... shall be busy’d and employ’d in contemplating the Works of God”; then we will see the purpose of all things which, for now, are too subtle or too inaccessible for us to discover (171). In a way, the future bliss will be the continuation of the research of God’s creation which Ray conducted on earth.

In order to reach the right side of the afterworld, each person should accept the fact that Christ died for each person's sin and then live a virtuous life as delineated by Ray in his practical theology slim book, *A persuasive to a holy life* (1700), five years before his death. Three books written by Ray the clergyman, one extremely successful, the second moderately so, were not enough to appease his ecclesiastically troubled soul. In his dying words, he said, "That I did not follow the peculiar Duties of my Function more, is now the greatest Concern and Trouble to me."¹⁷ We can only wonder whether he was not a bit too overscrupulous in his self-assessment.

Summary

John Ray was primarily interested in his work as a naturalist. However, prompted by his conscience and the sense of his priestly obligation, he authored three books of religious character: one on physico-theology, one on sacred physics, and one on practical theology. The article presents some of his views expressed in these books.

Keywords: John Ray, physico-theology, teleology, sacred physics

Streszczenie

John Ray interesował się przede wszystkim swoją pracą jako przyrodnik. Jednak kierując się swoim sumieniem i poczuciem kapłańskiego obowiązku, napisał trzy książki o charakterze religijnym: jedną o fizyko-teologii, jedną o fizyce sakralnej i jedną o teologii praktycznej. Artykuł przedstawia niektóre z jego poglądów wyrażonych w tych książkach.

Słowa kluczowe: John Ray, fizyko-teologia, teleologia, fizyka sakralna

¹⁷ W[illiam] Derham (ed.), *Philosophical letters between the late learned Mr. Ray and several of his ingenious correspondents, natives and foreigners*, London: Printed by William and John Innys, p. 374.

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