ACTA UNIVERSITATIS LODZIENSIS
FOLIA IURIDICA 100, 2022

https://doi.org/10.18778/0208-6069.100.09

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NORMATIVITY AND ONTOLOGY OF LAW IN EARLY GREEK PHILOSOPHY

Abstract. The paper is devoted to the issues of the emergence of European science and philosophy, founded by the ancient Greeks. In the period known as the First Enlightenment, there was, on the one hand, a gradual departure from the mythological explanations of the reality, and, on the other, the construction of a new way of looking at the world, known as the *study of nature*. The inquiries of the ancient Greeks had an ontological dimension; they consisted in searching for the *arche* of the world and they were looking for the ultimate structure of reality, and, what is important, the human being was situated in these studies as an integral, but not the most important part of the Cosmos, subject to its laws. Presocratics did not put the human being above nature, because they did not strictly distinguish between the laws of nature and the laws of community. This was one of the reasons why the science of law did not arise at that time. Besides, the Greeks never reduced their right to the system, because too often gods or *demos* 'interfered' with the laws of the *polis*. It was a typical example of "law without jurisprudence", because it was flexible and had vaguely formulated rules and institutions. Another significant factor here was the lack of the trained group of professional lawyers.

This period ended with the advent of Socrates' philosophy. Up to his time, philosophy had studied numbers and movements, and had dealt with the question of where all things have their origin and where they disappear; it also had observed the stars, the distances between them, their circuits, as well as had studied phenomena which appear in the sky. The early sages believed that they could gain knowledge by conducting research into natural phenomena themselves. Socrates rejected the ontology and study of nature initiated by the Milesians and other early Greek thinkers in favour of searching for the meaning of words and concepts found in the Athenian *polis* language. He believed that finding the meaning of words translated into revealing the reality which could not be reached otherwise.

Keywords: *arche*, *physis*, study of nature, normativity, ontology, Thales, Anaximander, Pythagoras, Empedocles

NORMATYWNOŚĆ I ONTOLOGIA PRAWA WE WCZESNEJ FILOZOFII GRECKIEJ

Streszczenie. Artykuł poświęcony jest przybliżeniu problematyki powstania europejskiej nauki i filozofii, które zostały ufundowane przez antycznych Greków. W okresie nazywanym Pierwszym Oświeceniem doszło, z jednej strony do stopniowego odejścia od mitologicznych

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Received: 29.10.2022. Verified: 28.10.2022. Revised: 3.11.2022. Accepted: 1.12.2022.

wyjaśnień rzeczywistości, z drugiej – do zbudowania nowego sposobu patrzenia na świat, zwanego *badaniem przyrody*. Dociekania antycznych Greków miały wymiar ontologiczny – polegały na poszukiwaniu *arche* świata – poszukiwali oni bowiem ostatecznej struktury rzeczywistości, a co ważne, człowiek usytuowany był w tych badaniach jako integralna ale nie najważniejsza część kosmosu, poddana jego prawom. Presokratycy nie stawiali człowieka ponad naturą, nie odróżniali bowiem ściśle praw przyrody od praw wspólnoty. Był to jeden z powodów, dla których nie powstała wówczas nauka prawa. Poza tym, Grecy nigdy nie redukowali swojego prawa do systemu, ponieważ zbyt często bogowie lub *demos* „wtrącali się" do praw *polis*. Było ono typowym przykładem „prawa bez prawoznawstwa", ponieważ było elastyczne a także posiadało niejasno sformułowane reguły i instytucje. Istotny był tutaj również brak wyszkolonej grupy zawodowych prawników.

Okres ten zakończył się wraz z pojawieniem się filozofii Sokratesa. Do jego czasów filozofia badała liczby i ruchy, a także zajmowała się zagadnieniem, skąd wszystkie rzeczy biorą swój początek i dokąd znikają; obserwowała też gwiazdy, odległości między nimi, ich obiegi oraz badała zjawiska pojawiające się na niebie. Pierwsi mędrcy uważali, że zdobywają wiedzę przez prowadzenie badań dotyczących samych zjawisk naturalnych. Sokrates odrzucił ontologię i badanie natury zapoczątkowane przez Milezyjczyków i myślicieli z obszaru Wielkiej Grecji, na rzecz poszukiwania znaczenia słów i pojęć występujących w języku ateńskiego *polis*. Sądził bowiem, że znalezienie znaczenia słów oznacza odsłonięcie rzeczywistości, do której inaczej dotrzeć nie można.

Słowa kluczowe: *arche*, *physis*, badanie natury, normatywność, ontologia, Tales, Anaksymander, Pitagoras, Empedokles

When we write about the Greeks, we often refer to their myths. Our acquaintance with myths allows the understanding of their culture, which is a long way off our times. We know that culture of every community is a searching for the reasons behind our presence in the world and the interpretation of the meaning that we give to our life. It is a series of trials of finding the answers to the questions that are related to the incomprehensible reality (Ortega, Gasset 1993, 68). Ancient Greeks found the answers to these questions with the help of myths.

In Greek mythology, we can find parables which refer to the law. Here, I summon a Platonic myth that came from *Protagoras* that is a dialogue devoted to the problem of whether we are able to learn how to use political abilities and virtues that enable us to live in the community or in general, and if we are capable of teaching others virtues. The protagonists of the dialogue include Protagoras, a sophist, who taught young people politics and public speeches, which brought them prudence, connected to issues of the city; and Socrates, who doubts that virtue and politics are learnable. Protagoras, who is trying to defend his views, tells a myth that in allegorical form presents his theoretical viewpoint:

Once upon a time, there were gods only and no mortal creatures. But when the destined time came, these also were to be created; the gods fashioned them out of earth and fire and various mixtures of both elements in the interior of the earth. And when they were about to bring them into the light of day, they ordered

Prometheus and Epimetheus[1] to equip them and to distribute among them their proper qualities severally. Epimetheus begged Prometheus: "Let me distribute, and do you inspect" (Plato 1956, 18, 320D). Prometheus agreed and Epimetheus made the distribution. Thus did Epimetheus, not being very wise, forget that he had distributed among the brute animals all the qualities which he had to give. And when he came to the race of human beings, which was still unprovided, he did not know what to do. Prometheus discovered then that his brother used all the qualities that he had, but had forgotten about the human – naked, shoeless, and defenceless. The appointed hour was approaching when the human in his/her turn was to go forth from the earth into the light of day. And Prometheus, not knowing how he could devise humans' preservation, stole the wisdom of Hephaestus and Athene of practicing the arts and fire with it (it could neither have been acquired nor used without fire), and gave them to the human. Thus the human being had the wisdom necessary to the support of life, but political wisdom he/she had not, for that was in the keeping of Zeus (Plato 1956, 19, 321A, B, C, D). Now the human, having a share in divinity, was at first the only one of the animals who had any gods, because he/she alone was of their kindred, and he/she would raise altars and images of them. He/She was not long in inventing articulate speech and names; and he/she also constructed houses, clothes, shoes, and beds, and drew sustenance from the earth. Although people's daily necessities were provided, the humankind at first lived dispersed and no cities existed. But as a consequence they were destroyed by the wild beasts, for they were utterly weak in comparison to them, and their arts and crafts were only sufficient to provide them with the means of life and did not enable them to carry on war against the brutes. Food they had, but not as yet the art of government, of which the art of war is a part. After a while, the desire of collective living and of self-preservation made them found cities; but when they were gathered together, having no art of government, they dealt unjustly with one another, and were again in process of dispersion and destruction. Zeus feared that our entire race would be exterminated, and so he sent Hermes to the humankind, bearing reverence (*αἰδώς*) and justice (*δίκη*) to be the ordering principles of cities and the uniting bonds of friendship. Hermes asked Zeus how he should impart justice and reverence among humans: "Shall I distribute them as the arts are distributed; that is to say, to a few only, one specialist in the art of medicine or in any other art being sufficient for a large number of laymen? Shall this be the manner in which I am to distribute justice and reverence among men, or shall I give them to all?" "To all," said Zeus, "I should like them all to have a share; for cities cannot exist if a few only share in justice and reverence, as in the arts. And further, make a law by my order that he who has no part in reverence and justice shall be put to death, for he is a plague of the state" (Plato 1956,

[1] 'Prometheus' is derived from the word meaning 'forethought', and 'Epimetheus' from the word 'afterthought.'

20–21, 322A, B, C, D, E). Thus, the gods decided that those principles should not be separated, same as other skills, that one human being is more endowed with to serve another people; everyone should participate equally in respect and justice – this is a condition for the existence of *poleis* (Voegelin 2013, 475).

Here, I will not analyse the myth that Protagoras have told (it is interesting due to the use of the concept of 'reverence', so the need of decency, what, as it is seems, faded in the contemporary culture), but when we think about the deep meaning of the myth, we will come to understand Greeks' belief that law, according to which humans should proceed, is a gift from gods.

It is interesting that in Greek myths which are referring to the law, there are metaphysical problems such as: Who gave us the law? What is law and why does it exist? When we make an attempt at reconstructing the answers to these questions, we will have to provide the cultural context of their asking. Let us think of the widest context of the myths' emergence: Why did ancient Greeks create a group of the Olympic gods? Well, some features of the Greeks' primary religion tell us that it appears from human weakness and from the need of help. In a mysterious and dangerous natural phenomena they saw the unknown for human powers, towards which they were completely helpless. Heaven and earth were gods for them, the heaven – Zeus, and the earth – Thetis. Their mythology was a great curtain woven with dreams of the birth of Olympic residents. Myths about the Olympic gods gave Greeks the possibility to understand and accept the world. In the pre-philosophical period, Greeks justified "with myths' help" the misery of life on the Earth easier, as well as the more beautiful life of gods (Snell 2009, 55). Myths were the epiphany of the ancient Greek culture. Existential solutions to the problems contained in them that came from a real necessity were authentic solutions, ideas, evaluations, styles of thinking, art, and law, being an effect of the radical depth of humans to the degree that they commenced a culture.

At the beginning of the 6th century B.C. in Ionia. a different view of the explanation of the world emerged, which constituted a challenge to tradition (after some time, it turned out that it had deep and constant impact on later Western culture). Greek science and philosophy have origins in this area, located in Asia Minor on the east coast of the Aegean Sea. In Miletus, on the island of Samos (where Pythagoras came from), in Ephesus as well as in other Ionic *poleis*, a completely new approach to perceiving the world developed – that of relying on a systematic observation of nature and on trust in the power of the human reason, which led to new and bold explanations of nature and creation. Back then, Ionia was a lively, cosmopolitan region, full of new ideas and innovations, in which conquests of old and new cultures merged with each other. Despite the fact that it was an important trade area, it was on the margins of older civilisations, such as Egyptian and Babylonian, but owing to the trading activity of its citizens, it could have access to knowledge achieved in the oldest cultures. The dissimilarity of intellectual and cultural situations between the citizens of

the Ionic *poleis* was relevant in relation to people who lived then in dominant, old circles of culture. Well, it is important that outstanding individuals who were living in the areas of the eastern coast of the Aegean Sea were almost free to express their views and to ponder the world. They were free from bureaucratic restrictions or religious dogmas that limited intellectual freedom in the dominant cultural centres back then. For those reasons, the cultural environment of Ionia was conducive to the comfortable interchange of ideas which flowed from the world that was known at that time. A remarkable skill that Milesians had due to their mobility and enterprise was the special treatment of knowledge which came from the East. The knowledge was absorbed and processed, but also creatively-developed and applied, and the process created fertile ground for formation of new theories and the development of science. This comfortable interchange of ideas, which came from different cultures, led to the emergence of new, unusual concepts, mainly astronomical and meteorological, that were designed to explain the structure of the world. For example, there was a view which established that the Earth is a planet that moves around the Sun, as well as the idea that celestial bodies are not gods but more likely – material beings. Metaphorically speaking, this period is a result of transforming mythological Chaos into philosophical Cosmos; Abyss into structure. Due to the freedom to conduct research, Ionian sages began to expose the naivety of the traditional way of explaining the world and they tried to present a new approach to its understanding, which was based on observation and rational insight into reality. They accepted a new and crucial hypothesis that the world and processes occurring in it can be known to the human mind, and at the same time they began to be aware of the fact that the physical world is functioning according to the laws that are knowable by human beings. It was a new perspective, although it was not completely atheistic, which estranged from mythology, with its anthropomorphic gods, and it tried to achieve the natural and cultural phenomena granted by oral tradition.

The new worldview was based on observation, mathematical measurement of natural phenomena, and the capacity of the human mind; so, it referred to the intellect. This cardinal and iconoclastic intellectual revolution for tradition deserves to be called the First Enlightenment and it started in the 6th century in Ionia, and quickly spread throughout the Greek world (Schyff 2010, 3). The beginnings of European philosophy are usually identified with the rejection of mythological explanations of reality and with the adoption of rational explanations in terms of causality by the Presocratics; therefore, the phrase "from myth to reason" accurately reflects the scale of the breakthrough made during that period. However, it is crucial to remember that philosophy and mythology were at that time inherently connected, and that until the time of Athenian Enlightenment, it was often difficult to distinguish them from each other (Naddaf 2009, 99). Much has been written on this famous transition, which many once considered

the "Greek miracle"[2]. First sages were called by Aristotle *phusiologoi*, because they examined *φύσις* and discovered 'nature' as objectivity. In their thinking the common assumption is visible that order which makes our world a Cosmos is natural. It means that it is immanently present in nature. Back then, the regularities in nature were noticed and it began to be discovered that the nature is not completely unpredictable; moreover, it was becoming clear that in the Cosmos which for Greeks was a name for the whole terrestrial and extraterrestrial world, there are patterns that allow the discovery of the repetitive and unchanging laws of nature. The consequence of these autonomous intellectual explorations, in relation to the traditions, was the recognition that for exploring the world it is not necessary to put intervention of supernatural beings in it, with the help of which the reality had been explained to date (Naddaf 2009, 105).

Ancient Greeks deeply felt the majesty of the reality grasped with the senses. They associated beauty, which is perceived by the sense of sight, with sunlight. The most important "lumber," which the transcendence of each of their sanctuaries referred to, was the light of our star. Those people who built Greek temples raised them high so that they could be as close to the sunlight as they can be. Let us take into account the Athenian acropolis, the temple of Poseidon built on Cape Sounion[3] or the acropolis of Lindos[4] on the island of Rhodes. The Greeks' adoration of

[2] See, for example: Burnet (1920); Morgan (2000); Most (1999).

[3] The farthest south-eastern cape of Attica. Every sailor who leaves Piraeus, passing the island of Aegina, says goodbye to the Greek continent looking at Cape Sounion. Due to its unique position, such as a 'lighthouse' on a high rock falling vertically into the sea, this cape has always been a landmark for sailors sailing from Ionia, Crete, the Dodecanese, and the Cyclades towards Athens. From the 8th century B.C., on a rock rising steeply above the sea, there was an area of worship with an altar. In ancient times, a temple which was dedicated to Poseidon was erected on it. Around 490 B.C., during the wars with Persia, it was destroyed by Xerxes' armies. In the years 444–440 B.C., during the reign of Pericles, the temple of Poseidon was rebuilt in the Doric order. It is one of the classic monumental buildings of Athens' golden age. The cape is associated with the myth about Aegeus and his son Theseus. When Theseus went to Crete to fight with the Minotaur to save Athens from the terrible annual tribute, his father waited for him on the southernmost cape of Attica. They agreed that when Theseus returned, he would give a signal to his father that he had killed the monster by setting scarlet sails. Theseus, who was in love with Ariadne, forgot about the contract and set black sails. When Aegeus saw the colour of the sail signifying his son's death, in despair, he threw himself into the sea from high rock. To commemorate this dramatic act, the sea into which Aegeus jumped from despair was called Aegean (Parandowski 1960, 208–212).

[4] Lindos is a town located on the east coast of Rhodes, the biggest island in the Dodecanese archipelago. In antiquity, it was included in the Doric Hexapolis, which also included Halicarnassus, Ialysos, Kameiros, Kos, and Knidos. In the 6th century B.C., on a seaside rock – on the high acropolis of Lindos – the Dorians erected the temple of Athena Lindia, which was probably the regional centre of her worship. Strabo wrote about Lindos in the following way: "(…) gold rained on the island (Rhodes) at the time when Athena was born from the head of Zeus, (…)" (Strabo 1924, 14.2.10). Outside the sanctuary, on the acropolis, there were *propylejes* and *stoa*. The temple was placed over a natural cave, situated on a seaside cliff, which may have been the place of worship of Athena before. The fame of the temple is evidenced by the fact that Alexander of Macedon and

the sunlight is visible also on many pages of *Odyssey* and *Iliad*[5]. A shocking, but thought-provoking example of their irresistible need for the sun is the prayer which Ajax addresses to Zeus after Patroclus' death outside the walls of Troy. At that time, during dramatic battle with the victorious Trojans, clouds obscured the sky and cast a shadow on the Achaeans. It is symptomatic that Ajax did not beg neither for life nor for victory, but for Zeus, although he decided to extinguish the Achaeans, not depriving them of the sunlight[6].

The strength of the Greek culture was an ability to combine a passion for sensual perception of the world with a tendency to grasp the world with reason. We can notice the example of the influence of poetry on the shaping of scientific theories. It indicates cultural or maybe, above all – observational (meteorological and astronomical) conditions for constructing hypotheses which are related to the mysteries of the world. The cultural 'transmission' of poetic fascinations of our star finds reflection in Milesians' views about the meaning of the Sun as a concentrated fire source in the Universe. The primacy of the Sun in the structure of the Universe was recognised by Anaximander of Miletus and by his followers and associates. The reaction of the Sun is reflected in their interest in solstices, equinoxes, and the measurement of days and hours. We know that the word 'meteorology' comes from Milesian research. Milesians could not tell the difference between astronomy and meteorology; they thought that they are related, because the Sun's annual advancement in the sky marks the stages of seasonal changes in Earth's atmosphere. Thus, at the beginning, meteorology did not constitute a separate subject of research; rather, it was an alternative designation for the concept of the 'study of nature' (*περί φύσεως ίστορία*). At that time, it included astronomy, but also the observation of atmospheric processes, although these two fields of research were considered to be physically continuous. If we

his successors made sacrifices there. The island of Rhodes was considered a significant place of worship of Athena in antiquity, and her sanctuary on the acropolis of Lindos was mentioned next to the temple of Athena on the Acropolis in Athens.

[5] "And now the sun, leaving the beauteous mere, sprang up into the brazen heaven to give light to the immortals and to mortal men on the earth, the giver of grain (…)" (Homer 1945, 68).

"Now Dawn arose from her couch from beside lordly Tithonus, to bear light to the immortals and to mortal men" (Homer 1945, 171).

Also, in contrast to the people who are gifted with the light of the sun, Homer sadly describes the misery of the lives of the inhabitants of the dark Cimmerian lands lying on the shores of the Oceanus:

"Never does the bright sun look down on them with his rays either when he mounts the starry heaven or when he turns again to earth from heaven, but baneful night is spread over wretched mortals" (Homer 1945, 386).

[6] "Father Zeus, deliver thou from the darkness the sons of the Achaeans, and make clear sky, and grant us to see with our eyes. In the light do thou e'en slay us, seeing such is thy good pleasure." So spake he, and the Father had pity on him as he wept, and forthwith scattered the darkness and drave away the mist, and the sun shone forth upon them and all the battle was made plain to view (Homer 1924, 645–651).

could call Ionian study meteorology, *μετεωρολογία*, that is because the interest in 'things up,' *τὰ μετέωρα*, was profound and the results they obtained had particular importance to their researches (Kahn 1960, 104–105).

Descendants of Agamemnon gave us a seemingly simple but also thought-provoking conviction which explains the sense of our presence in the world:

"We are on the Earth to look at the sky."[7]

Its depth amazed for many reasons, but from our point of view mainly for that it does not contain an ontological answer to the questions: How is the world built? *or* What is the world? Rather, it suggests a direction in which we should proceed to find out what the world is. So, it indicates for us an epistemological tool and tells us how we should use it: look at the sky and draw conclusions from these observations so that you can learn how the world works. Only by using this method is it possible to come to ontological conclusions.

Every day that a Greek observes the nature, he/she sees a continual exchange in it, by turns: the light and the darkness, fresh morning dew and hot noon. As a result of the everyday experience of repetitive phenomena, he/she singularises the same process which occurs during the producing of fiery lightning from the wind and clouds that, in turn, arise from steaming moisture. Falling extinguished fire and condensation rain cloud will counteract the rising tide of dryness and warmth, causing the maintenance of the balance of the wholeness. The appearance and disappearance of the moonlight, in turn, is completed in the lawful exchange of origination and decay. If celestial balance was conceived by Anaximander as the stable sphere, it is the rotating circle that best symbolises this rhythm of elemental change. This image of law which is dominant in the Cosmos is preserved in our terminology that in this regard is still early Greek: a word 'cycle' from *κύκλος* (originally 'circle'), a word 'period' from *περίοδος* ('rotation'). From Ionian school's point of view, the dominant cycle was the solar cycle, because according to annual movement that we observe, seasons of heat and cold as well as dry and rain follow each other when reign of the daylight goes away from long winter nights. In *De Victu*, Hippocrates describes divine necessity (*θεῖα ἀνάγκη*) according to which everything is happening; it is that rhythmical oscillation between maximum and minimum shown over the periods of day and night, moon and annual movement of the sun. In human beings, periods of the youth and old age of growth as well as descent from the world are example of the same cyclical law. The author of *De Victu* developed the idea according to which a human being's life is the abbreviated model of the space year, which ends with the winter solstice (Kahn 1960, 184).

[7] Pythagoras asked about for what purpose Nature and God brought us to life, replied "to see the sky" and, he added that he was "an observer of the nature and just for this purpose, he was brought to life" (Arystoteles 1988, 9).

For Ionians from the 5th century, it is the seasonal regularity of heavenly and meteorological processes that shows the organic structure of the Universe the best. The cycle of the stars and the seasons is a basic fact for every agricultural society that has to pursue establishing a certain harmony between human activities and movements of the celestial bodies.

In ancient civilisations, there were no concepts which distinguished nature from society and which have become a habit for us. For example, in Homer, there is no recognised boundary between the human way of life and the order of the Universe. Nature is not standing in front of a human being; there is the power of the gods who are interfering in people's lives as easily as in the world of nature. Poseidon is the ruler of the sea, earth-shattering, but at the same time he stands in battle alongside the Greeks in front of the walls of Troy. Zeus is a god of the storm and once a man of the power of the sky itself, but when he strikes a lightning bolt, its purpose is to enforce the penalty to the perjurers. Horas – daughters of Zeus who are goddesses of the seasons, are later to become astronomical hours. Their mutual mother is Temis and their names are Justice (*Dike*), Peace (*Eirene*), and Good Distribution (*Eunomia*) (Kahn 1960, 192).

A sophist Prodicus from the island of Ceos wrote a work called "Horai" (it has not survived to our times). The title of it is not clear to us. The word itself that related to the names meant three daughters of Zeus and Temis: goddesses *Dike*, *Eirene*, and *Eunomia*, but, what is more interesting to us is that "*horai*" as the common word meant all of the periods of time with the appropriate 'season' assigned (Krokiewicz 1971, 264– 265).

An emblematic example of a person who was conducting nature observations is Thales (ca. 624 – ca. 547 B.C.) He came from Miletus, a Greek *polis* located in a flourishing part of the Hellenic world, at the intersection of the trade routes between the Ionian Islands, the Sporades, the Cyclades, and the Dodecanese, mainland Greece, Egypt, Mesopotamia, and the Middle East. Back then, Miletus was an important metropolis that ruled over eighty colonies scattered across the area from the Black Sea to Egypt. The Ionian culture was developing there, influenced by older Eastern cultures. Contacts with Egypt and Mesopotamia had a significant impact that is visible in the 'orientalisation' of the Milesians. It seems that it had an effect on some ideas and discoveries that were attributed to them (McKirahan 2010, 24).

Information about the life of the founder of the Ionian school is uncertain; his father probably came from Phoenicia (Świeżawski 2000, 13–14)[8]. Thales was a sailor and, among other things, he was engaged in trade. He did not *study* in the modern sense. However, we know that after he came to Egypt, he got acquainted with the knowledge of the local priests (Laertios 2004, 24). He was an enterprising

[8] According to another author, his father Eksamyes was probably Karian (Krokiewicz 1971, 71).

man, an innovator who opened many practical spheres of knowledge, including engineering, physical surveying, and marin navigation. These practical abilities probably helped him to achieve refined astronomical and mathematical knowledge. He could, for example, measure distance of ships at sea as well as anticipate the Sun's eclipse and determine the time of the solstice of day and night. Thales used mathematical and astronomical abilities for theoretical purposes. Most likely, he was one of the first who tried to look for knowledge hidden from us, knowledge that would serve no practical purposes. He sought knowledge in a theoretical way through asking questions of a scientific and philosophical nature. Thales was the first one to try to present mathematically and rationalise celestial phenomena by making a distinction or counting the recurring sequences and compounds of the celestial bodies in the spectacle that appears in the sky, and then by measuring these periodic regularities. Thales' activity as an astronomer included the detection of new groups of stars, the observant measurements of the solar cycle, and the systematic correlations of star and solar data. In quantifying what he observed, Thales went much further than his predecessors had. Theophrastus agreed with Aristotle that Thales deserves his place as the founder of ancient Greek science (White 2002, 15).

Most of the historians agree that Thales was the first Presocratic; however, many unwillingly call him the first philosopher. In ancient times, he had a reputation of the sage. Plato, in a known dialogue, named him as an outstanding sage (Plato 1956). He introduced te key concept of the nature (*φύσις*) to the dictionary of philosophy. Term *physis* was closely related to the expression "*phyesthai* – to grow" and it meant some kind of precept which is demonstrated by the fact that what 'grows,' grows in the same arranged way, the right way that is inherently determined for it, how it grows and dies in its own natural manner. What is growing is changing and, at the same time, is remaining itself (for example, a seed and a grain growing from it). Thales noticed that what is growing, changes and at the same time, it remains itself, so it incorporates the *principle* of movement and rest. By the word "*physis*", he understood an essential being that was for him an internal cause of appearance (and movement) of the whole world and all of its parts which are falling under senses (Krokiewicz 1971, 74–75). Discoveries that were made during the *research of the nature* led him to the following *aporiae*: How does it happen that what we see in nature is changing and, at the same time, remains itself? Or, formulating the issue more generally: is there something in our world that is stable and permanent, or does the reality always change?

This question was created against the background of the Milesians' search for the structure of ultimate reality. That is why the main question asked by Thales is: What are all things "made of"? And, as far as we know, he was the first one to ask this question, and his answer is the same type of answer that was given by later Presocratics. However, it was not the only object of reflection on nature of

his. Different, but equally important was the question: What is the origin of all things? By identifying water as their source, he referred to Middle Eastern and Greek mythological descriptions of the origin of the Earth, with which his claim that the Earth is floating on the water was in perfect harmony. Thales' question came from the past, but his answer, which is rooted in the nature of the world around us, and not in the family history of the gods, rejected tradition and gave its successors a starting point (McKirahan 2010, 29).

Aristotle attributed the presentation of the first theoretical postulate in the history of natural sciences to Thales, which can be described as follows: all things are modifications of water[9]. It was the first formulation of a general principle in the history of European science (White 2002, 2–3). Here, we have to summon a well-known phrase from *Metaphysics*, in which Aristorle called Thales the founder of "this kind of philosophy" (Aristotle 1933), meaning a reflection seeking the material cause of everything – *Ἀρχή* of the world.

A word *ἀρχή* was a colloquial expression, but under the influence of Thales, it changed its meaning. Basic, colloquial connotations of this term come from the language used in Greek epics. For example, in *Iliad*, the basic sense of the verb *arche* was "leading [troops to battle]." *Ἀρχή* may also mean 'rule' and also 'go first,' 'begin' in any action. It can also be rendered as the first limb in a chain of events (see: Kahn 1960, 235–236).

By *arche* as a theoretical term Thales understood something that is the *beginning* and *cause* of the Cosmos and the whole reality; it was also equated with the word *physis*. However, for Anaximander, not only was there the beginning, but also the *rule* that runs the world; not only primary, but their exact nature. *Arche* for Ionian philosophers was an original rule that guides the world and, at the same time, pre-substance, from which all of the things have been made; it was also a basic component of the reality. Therefore, the opinion of Ionian philosophers of the nature about the principle of the world comes down to a conjunction: everything comes from *arche* and everything is *arche.*

Thales showed the ultimate structure of the world in the following hypothesis: everything is from the water, from the water it arose, and it consists

[9] Any attempt to recreate Thales' thoughts faces a serious obstacle, namely the complete lack of source texts. This is inevitable in his case. Thales lived at a time when writing was used almost exclusively in poetry and in administrative matters. But the lack of texts, while making it difficult to recognise the nature of his views, does not invalidate all of our testimonies. At least one person who knew him directly and was deeply interested in his views – namely Anaximander – left a written testimony of him. For this reason, Aristotle's message is important, because he drew from the collections of the library in the Lyceum, which contained the messages of Thales' students, i.e. the most faithful ones (we have a similar situation here as in the case of the testimonies of Socrates, given to us by Plato in his dialogues). We know from Aristotle and Theophrastus that at least some of his works have survived long enough to be studied in the Lyceum. If Anaximander and his contemporaries noted some of Thales' views, it probably also gave Aristotle and his associates a credible basis for judging at least some of Thales' achievements.

of the water. These words were unprecedented, so let us dwell on them and let us remember their real meaning: our eyes delude us; what we see is an illusion. It seems to us only that the sword is of the iron, the greaves of the bronze, and the boat of the wood. It all comes from a water; but from the water that seems so, and then different. Steam out of it, ice out of it, metal out of it, Earth and flesh out of it, everything that is in the world was made of it and all things are actually water, one way or another (Witwicki 1957, 10). This way, he denied the seemingly obvious testimony of our senses. For Thales, the water was an *arche*, which means the *beginning* and the *principle* of the thing. He reached this conclusion on the basis of the observations that: "(…) nutriment of everything is moist, and that heat itself is generated from moisture and depends upon it for its existence (and that from which a thing is generated is always its first principle). He derived his assumption, then, from this; and also from the fact that the seeds of everything have a moist nature, whereas water is the first principle of the nature of moist things" (Aristotle 1933).

Here, a completely new thought has been expressed. Thales said about *water*, his predecessors about *gods of the water*; he said about a real thing, they – about fantastic characters. Predecessors were embedded in mythological poetry. Thales broke with mythological and uncritical thinking. He saw nature as the complete and self-organising system, and he saw no reason why to invoke divine intervention from outside of the natural world by making this explanation complete – the water itself may be divine, but it is not something that interferes with the natural world from the outside.

Thales and Anaximander looked for a "rule" to which it is possible to reduce a multitude of phenomena that are revealed to us directly in the world. In metaphysical the question about *arche* there was an unusual conviction hidden that the world perceived by our senses does not explain itself. Presocratics believed that this was the reason why the reality is as it is and also that it exists at all; although it is immanently built into the world, it is hidden from us, because it lies deeper than what we can perceive. The path of seeking the ultimate reality that they chose led to the direction of finding the rule understood as the final substrate of what is directly given. In other words, in their attitude, the following cardinal assumption was included: only being available to pure rational cognition is real, and that what we perceived with our senses is unreal and illusive. Ionian sages wanted to demonstrate that *ἀρχή* is what *justifies* the rest of the reality, in this regard that this "rest" given directly to us can be reduced to one or another *arche*. What is significant is that the theories of Presocratics contained within them the implicit assumption of the existence of "two worlds": the reality of what is given to us through senses and the ultimate reality in which it is the implicit foundation of the first world (Stróżewski 2006, 257–258).

In his physical theory (*physike theoria*), Thales assumed that the order of the world which was called later a *Cosmos* is natural, which means that it is

immanently present in nature (Naddaf 2009, 105). A view, which is now valid is that Thales and Milesians were probably the first ones to *imagine* the entire Cosmos as the systematic structures of geometric solids. In sources that are available to us, we find very little information on what cosmological model Tales proposed. Everything what Aristotle and his associates attributed to him is the idea that the Earth is floating on the water (Aristotle 1933, 983 B). Plato described his fascinations with the world in *Theaetetus,* by speaking in the words of Socrates about what was occupied by Thales: "(…) as Pindar says, 'both below the earth,' and measuring the surface of the earth, and 'above the sky,' studying the stars, and investigating the universal nature of everything that is, each in its entirety, never lowering itself to anything close at hand" (Plato 1921, 173E–174A).

Thales watched the sky and admired there the endless spectacle which is portrayed by stars and planets. A poet named Callimachus described his practice of observing the sky. He usually did this near Miletus on the seaside hill called Didima, from which the view of the horizon was located in the western and southern direction, and on the hills in the east. Unlike Miletus, which lies low on the south side of the bay, Didima was a perfect place to mark sunrises and sunsets and to observe the stars (White 2002, 7). This research of the nature's procedure founded a method of conducting search which is consisting in careful observation and systematic, quantitative treatment of the obtained data. Let us notice that it assumed the possibility of knowing the world by the means of intellect, because observation of the sky was made in order to draw rational conclusions, which without any doubts was an intellectual activity. This procedure laid the foundations for scientific research in general and in particular for the way of observing the sky which is based on repeatability of physical phenomena (McKirahan 2010, 24; White 2002, 3).

Detailed information about the astronomical achievements of Thales was provided by Diogenes Laertius:

"Who first of men the course made plain
Of those small stars we call the Wain,
Whereby Phoenicians sail the main" (Diogenes Laertius 1972).

The stars of the Little Wain, captured by Thales, are the constellation known today as Ursa Minor or "Little Bear." So, he was the first Hellen to see any reason for distinguishing the group of stars to which the Pole Star belongs. Greek mariners steered by the Great Bear and the Phoenicians by the Little Bear, as Ovid states. The association of this message with what we know about the activities of Thales, which included sailing in the waters of the Mediterranean Sea, may indicate that the sky observations were mainly used for navigation purposes.

Thales also observed two different groups of the stars: Hyades and Pleiades. Both of them had been known to Greeks much earlier; they had already been mentioned in the epics of Homer. The mythological context in which they are appearing is significant in any case. They are described in *Iliad* (Homer 1924,

470–489), where they are portrayed on the shield that Hephaestus sculpted for Achilles. The author tells us about them also in *Odyssey* (Homer 1919, 268–280), where they are mentioned in the directions that the nymph Calypso points to Odysseus to sail happily home. The nymph gives advice to Odysseus that he should keep the Pleiades and three other constellations to his left when he is to manoeuvre the boat. It is a perfect example of this kind of strictly observational knowledge which Aristotle called "marine astronomy." Regardless of the navigational references, we should remember that from the Greeks' point of view, Pleiades were the most important constellation of stars of an archaic community, because they determined the key stages of the agricultural cycle. It is due to the fact that their morning appearing and disappearing appointed to present the beginning and the end of the year: tillage in November and harvest in May.

There is no doubt that Thales was an unconventional and also creative thinker. His originality and genius of theoretical achievements is evidenced by creation, which is unknown in Egypt and on the East; the creation of theoretical geometry, which means geometry recognised as a system of theorems, *theoremata*, logically resulting from and related to each other (Krokiewicz 1971, 73). The impact of his reflections on change in the way of thinking about the world can be defined as disruptive, because it was one of the first assigned numerical values of the observed regularities of phenomena. Thales' research practice was based on observation and quantitative treatment of the collected data. The basis of his hypotheses about the ultimate reality was thus empirical. According to our knowledge, Thales was the first one to try to present mathematically and rationalise celestial phenomena by distinguishing or counting repeated sequences and relationships of celestial bodies in a spectacle in the sky, and then measuring these periodic regularities. Thales, in general, laid the foundation for scientific research and in particular for the way of observing the sky.

Thales and Presocratics perceived the world as *Cosmos* and by this word they understood naturally-ordered arrangement that is inherently understandable and is not a subject of external supernatural intervention (Curd 2019). Presocratics distinguished the order of the Cosmos from the basic features of its components themselves, which they called "elements."

The theory of four elements which are also called "natural forces" is probably the most fundamental achievement of pre-Socratic physics. As we know, Presocratics' deepest struggle as a part of the conducted research of the nature (*περί φύσεως ίστορία*) was a discovery of the most basic lumber and the principle of Cosmos' structure at the same time; they looked for *arche* (*ἀρχή*). The beginning of this search was given by Thales and it was continued by the representatives of the Ionian school of natural philosophy and other Presocratics[10]. The culmination

[10] For Thales, the element was water, for Anaximenes – air, and Heraclitus of Ephesus considered it to be fire. The exceptions were the views of two Presocratics, who also searched for

of these observational and intellectual search was the classical doctrine of four elements, whose author was Empedocles of Akragas[11] (ca. 493 – ca. 433 B.C.), one of the biggest colonies, located in the southern part of Sicily. Empedocles introduced a group of four elements (tetrad) to the description of the world: earth, water, air, and fire (Love is what connects them, Disagreement is what dissociates them). Fire was symbolised here by the figure of Zeus, earth – by Hera, air – by Aidoneus, and water – by Nestis (Diogenes Laertius 1972, Chapter 2.76). The classical concept of the elements assumed the division of the visible Universe into the four great masses of Earth, Sea, Air, and the upper atmosphere or sky, considered to be a form of Fire. The canonical order of the elements, starting with the earth and ending with the fire, presents them in this particular order of ascending layers, and more specifically as the concentric rings grouped outside around the earth. However, there is another aspect to the classic four. In the earlier period of research of the nature, it was not less important that continually elements are in the process of constant and mutual transformation (transmutation)[12]. This is how Plato wrote about it in *Timaeus*:

> In the first place, what we now have named water, by condensation, as we suppose, we see turning to stones and earth; and by rarefying and expanding this same element becomes wind and air; and air when inflamed becomes fire: and conversely fire contracted and quenched returns again to the form of air; also air concentrating and condensing becomes cloud and mist; and from these yet further compressed comes flowing water; and from water earth and stones once more: and so, it appears, they hand on one to another the cycle of generation (Plato 2009, 173).

It is important that the theory of four elements is not only a simple calculation (water, fire, air, and earth) in terms of natural forces, from which Cosmos is built. It is about a deep intuition of physical "states of the matter" which are creating the structure of the world. A concept of four elements captured and led through the observation of nature to very abstract conclusions about "states of the world." They could mean the dynamic phase (in the case of fire as an element), the volatile phase (air as an element), the liquid phase (water as an element), and the solid

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the *arche* of the world, but found them in a completely different element of the Universe than the material element or the natural forces. It is about Anaximander and Pythagoras. The first of them considered that *apeiron* is an immaterial *arche*, which we explain today as *Endless*. Pythagoras, on the other hand, believed that numbers were the elements of all things and that the whole heaven was harmony and number.

[11] Akragas (Latin: *Agrigentum*) is a *polis* on the southern coast of Sicily; it was one of the richest cities of Magna Graecia. It was founded in 582 B.C. by the Corinthians and the Rhodians. In the period of its greatest prosperity, the colony had about two hundred thousand inhabitants. In the 7th century B.C., the temples of Hercules in the Doric order were built. The wealth of the *polis* is evidenced by the erection in the 5th century B.C. of the following temples: Hera, Zeus, Castor and Pollux, Hephaestus, Asclepius, and the most important of them, i.e. the Doric temple of Concord, which has survived to this day.

[12] See: Kahn (1960, 121–122).

phase (earth as an element). In contemporary physics, we talk about phase states of the matter that seems to be an exact reflection of the pre-Socratic concept of the four elements. As we can see, the theory of four elements which originally seemed to be naive and banal, by looking at it from the perspective of modern physics, extraordinary value should be attributed to it. Its congeniality becomes visible when geometric dimensions are assigned to the individual elements in the form of regular polyhedra: fire – tetrahedron, air – octahedron, water – icosahedron, earth – hexahedron. From this emerges the belief that the states of the world can be expressed mathematically by using stereometry. So, here the later view of Academics arises from that the world is mathematical, not because we put the mathematics that we have created, but because its structure is mathematical and, therefore, the mathematicality of the world does not come from humans. Thus, fore Greer seekers, cognition of the world had a dimension of the mathematical cognition. The doctrine of the early Presocratic – Pythagoras – was surely at the basis of such an attitude, as in searching for the structure of the Cosmos, he pointed to the number as the *arche* of the world (Dembiński 2010, 61–62).

As we can see, the achievements of Thales that were developed by later Presocratics disclosed *the normative character of the nature*, as well as its immanent element – a human being, who is a component of the entire Cosmos, subjected to the same laws. Let us notice that the discovery of periodicity, the repeatability of the phenomena in general, i.e. the normativity of the world, concerned all of aspects of the world, starting from:

– astronomy: with reference to star and planetary cycles, sunrises and sunsets, etc.;

– meteorology: with reference to cycles involving the transformation of four elements of the nature into each other;

– human life: with reference to birth and death, waking up and falling asleep.

Disclosure of the nature's normativity is a cardinal achievement of our civilisation. Let us think a little deeper what the hypothesis of the normativity of the world means. Well, it seems that it assumes a mechanism of the functioning of the reality that we see, based on constant repetition of the pervasive cycles of expressed phenomena.

On the one hand, the discovered periodicity and repeatability of the phenomena, if it is correctly described, allows for predicting future phenomena. On the other hand, the periodicity and repetition of the reality enables science as such to arise, and the laborious discovery of the laws that are ruling the world (the Cosmos). For our purposes, it is necessary to emphasise that no distinction was made then between the laws governing the physical world and the laws governing human communities.

Going further, it can be interesting to refer to the well-known thought of Ludwig Wittgenstein, placed in *Philosophical Investigations*: "199. Is what we call

'obeying a rule' something that it would be possible for only *one* man to do, and to do only *once* in his life? (…)" (Wittgenstein 1953, 80).

Nevertheless, we are not interested in the problem of following the rule now. From the point of view of our considerations, in the quoted thesis, one can find an insight into the nature of our reality, which boils down to a visionary intuition of understanding the impossibility of understanding transcendence in every area of the reality known to us, unless we assume the repetition and periodicity of phenomena. After all, we would never be able to understand what the Cosmos and reality would look like without the periodicity of planetary cycles, without astronomical and meteorological cycles, without the repetition of the seasons, and without the periodicity of human life. We cannot imagine what a "linear" world would look like (as opposed to a "closed" world in various types of cycles). It is unimaginable, because everything repeats over and over again according to the universal rule – the cycle (*κύκλος*) of the world, the constant repetition of the circulation of galaxies, stars, and planets around the stars, as well as the constant repetitions present in human life. But when considering such a 'facilitation' of the physics of the world, we can guess that these multiple cycles allow us to understand anything of the reality in which we appear! And now, the inevitable question is: Why does the world, and us, move in the cycles? This is obviously a metaphysical question that we are unlikely to find an answer to. However, to paraphrase Wittgenstein's thought, we can ask, and this is not a question much shallower than the cardinal question posed by Leibniz: "Is it possible that in any planetary system consisting of stars and planets, on any of the planets of that system, the light from that star could arise only once?"

Let us further follow the hypothesis of the Milesians and the analogous hypothesis of modern physics that everywhere in the Cosmos the same universal laws govern. In other words, let us ask ourselves: Would the existence of our world be possible without the repetition of physical phenomena, without the repetition and prediction of human behaviour, which is subject to the same cosmic laws? Logically, it seems not! Because then how could every law function, both physical and the one that regulates the rules in force in the community? The answer to this question does not only seem simple, but also enables us to get to the basic principles that govern human rights. This is because these principles turn out to be principles identical to physical laws, according to which the entire reality is constructed.

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