

Physis

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Physis, as the Greek counterpart to the Latin *natura*, describes the constitution and origin of complexes arising from themselves in various degrees of independence. Taken in a broad sense, *physis* can name the “growth” of plants and animals as well as the composition of a genus or the origin or composition of the entire cosmos (*physis ton panton*).

An inquiry into the origin and structure of the phenomena covered by the umbrella term *physis* is the starting point of the observations of the early Greek sages, as well as those of philosophers in the tradition of Plato, Aristotle, the Atomists and the Stoics who opened up the various fields of knowledge of the world. An oft-mentioned antithesis to *physis* is *techne*, which means the (mostly human-made) production of objects that do not have their origin in themselves. In the realm of actions, *physis* can be regarded as the point of orientation on which a successful life is to be aligned – one is to “live in accordance with *physis*”. With regard to a comprehension of phenomena in the world that transcends the superficial contemplation of objects, *physis* until late antiquity stands both for the concrete and complex determination of things and living beings as well as for the “essence” of God.

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1. Linguistic

The Greek word *physis* can be considered the equivalent of the Latin *natura*. The abstract term *physis* is derived from the verb *phyesthai/phynai*, which means “to grow”, “to develop”, “to become” (Frisk 2006: 1052; Caspers 2010b: 1068). In ancient philosophy one also finds the noun *physis* referring to the growth expressed in the verb *phyesthai/phynai* and to the origin of development (Plato, *Menexenos* 237a; Aristotle, *Metaphysics* 1014b16–17). In terms of linguistic history, this verb is related to forms such as the English “be”, German *bist* or Latin *fui* (Lohmann 1960: 174; Pfeifer 1993: 1273; Beekes 2010: 1598). In Greek itself, the aorist (a verbal aspect) of “to be” can be expressed with forms of *phynai*. With regard to its kinship with “being” and the basic meaning of the verb stem *phy-* or *bhu-* (“growing”), there has long been criticism of the conventional translation of the word *physis* with “nature”. With the Latin *natura*, which for its part goes

back to the verb *nasci* (“to be born”), one transfers the basic word *physis* into a different sphere of association. In this way, the emerging growth (of plants, for instance) is transferred into the realm of being born (e.g. Heidegger [1958] 1996).

The term *physis* can denote both the being and its “nature” that have emerged from a process of growth and the primordial cause of all emergence, growth par excellence, and thus, among other things, “origin”, “growth”, “natural form”, “(outward) appearance”, “constitution”, “instinct”, “character”, “regular order of nature” or “species” (Liddell/Scott 1996: 1964 f.). On the basis of ancient texts, a rough distinction can be made between two semantic fields: “essence” as a designation of the natural form or constitution of an individual living entity on the one hand; and on the other, “origin”, “beginning of growth” up to “all nature”, *physis* as a cosmic force, the origin of what emerges and its order, that which constitutes the

totality of natural things (Müller 2006: 21). The former explains the modern meaning of the word “*physis*”, which can name the sum of properties of a living being, e.g. in statements like “it has a strong *physis*” and terms such as “physiology”.

2. *Physis* as fundamental question of the ancient philosophy of nature

Historically, *physis* is the dominant term under which all the reflections of the early Greek philosophers were subsumed. Thus it has been handed down that many of the so-called pre-Socratics wrote works or poems with the title *Peri physeos*, “On Nature” (this being in most cases a retrospective designation by philosophical historians, Laks/Most 2016: 250). In the earliest literary testimonies of the Greeks, the Homeric Epics, the comparatively new word *physis* appears only in one place (Odyssey X, 303), where it was presumably used in conscious contrast to the more common *phye* (which primarily denotes the human constitution) in order to name the constitution of a plant (Caspers 2010a).

A glance at the fragments preserved from the works of the early Greek philosophers reveals how vast the range of things discussed under the heading *physis*: being and non-being, the emergence of the cosmos from chaos, the formation of living entities, the entanglement and disentanglement of the “(fundamental) roots” (*rhizomata*, elements, see Buchheim 1994: 145–182) and even astronomical phenomena. It becomes clear that *physis* does not only mean a more or less moving, animate or inanimate outside, but also a spiritually comprehensible inside of things and living beings, their “essence”. This, however, is not openly visible in a way that could be measured. Probably the best known statement about the opacity of *physis* is Heraclitus’ saying *physis kryptesthai philei*, famously translated as “nature loves to hide” (Fragment B 123 D–K, cf. Diels/Kranz 1968: 178).

3. Plato and Aristotle

In Plato’s dialogues too, the exploration of *physis* is a central task, where the term is used in response to Parmenides’ criticism of people’s inability to recognize

a unified principle behind manifold natural phenomena (cf. Schwabl 1959; Perls 1973: 249–254; Vetter 2016: 104–107). In Plato’s hands *physis* undergoes a change such that it can now designate a certain order founded in a divine activity, as expressed for instance in the statement that “God” is the *phytourgos*: “creator of nature” or “creator of essence” (Republic X, 597d; cf. Timaeus, e.g. 37c–d) (Mannsperger 1969: 264–283).

In the history of philosophy, a well-known passage in Cicero’s *Tusculan Disputations* (V, 10, 11) established the view that, in the figure of Socrates, Plato brought philosophy down from heaven to the city and to the contemplation of human customs, thereby turning from the philosophy of nature to ethics. However, this does not contradict the finding that *physis* is an important topic in Plato’s work. Rather, it becomes apparent that discussions of ethics are themselves rooted in the fundamental question of *physis*, proving again the enormous resonance of the term (Mannsperger 1969: 286–305). This can be seen especially in the *Republic*, where the *physis* of man and woman (456a) or the *physei dikaion* (501b), the “just by nature”, is mentioned (further passages are discussed in Ast 1956: 520–523). It can be said in general that a large part of the conversation in the *Republic* is dedicated to exploring the *physis* of humans and their psyche, the “principle of life” (Hardy 1884: 110–147; on Plato’s anthropology see Büttner 2000: 18–130). Yet Plato also marks a change of approach when in a key passage in the *Phaedo* the interlocutors discuss the problems that arise when one attempts to explain phenomena by merely looking at appearances without trying to grasp their actual determinants. Famously, Socrates wants to resolve this problem by basing everything on a gestalt (*eidos*) or form (*idea*) through which every phenomena receives its determination (Phaedo 100a, see Schmitt 1973: 225–228; Schmitt 2003: 225–232). *Physis* correlates with these *eide* or *ideai* in so far as it can indicate their realization or effect. Accordingly, it can be heard in Plato’s dialogues that one wants to capture the *physis* of an *eidos* (Philebos 44e, Parmenides 132d). At the same time, the interlocutors know that *physis* also refers to “all nature” (see, for example, Laws 891b–892c) and that ultimately the true *physis* is formed by the world-reason, the idea

of the good or the divine *Nous* (Hager 1984: 429 f.) and which in the *Timaeus* appears linked to its counterpart *chôra*, the “nocturnal abyss” which grants space (Fink 1957: 180).

The various pairs of opposites in which *physis* can be found and which would in turn generate important lines of debate in different fields of philosophy shed light on the wide scope of the term’s meaning. The most prominent of these contrasts in Plato’s work is the juxtaposition of *physis* and *thesis* in the opening conversation of *Cratylus* on the origin of linguistic naming. The opinion that linguistic expressions have their validity *physei*, “from their ancestral essence”, is contradicted by the view that they have this validity through “positing”, *thesei*. In another pairing, *physis* is juxtaposed with *nomos*, “convention” or “law”. In *Protagoras*, for instance, Plato twice places this contrast in the mouth of the sophist Hippias. The latter addresses those present as “kinsmen, intimates, and fellow citizens”, which they are “by nature” (*physis*) and not “by convention” (*nomos*); he explains this by saying that “like is akin to like by nature, but convention, which tyrannizes the human race, often constrains us contrary to nature” (Protagoras 337c–d; see especially Pohlenz 1953, including an overview of the *physis-nomos* antithesis in medicine and sophistry). Another opposition, particularly well-known from the works of Aristotle, is that of *physis* and *techne* – in this case, what is produced and what is artificial are distinguished from beings that arise spontaneously from their own essence, as do agents such as humans (for example, Republic 381b). In this context, reference should also be made to the manifold problematic of *mimesis*, the representation or imitation of the physical by art (Flasch 1965; Büttner 2017).

Aristotle unfolded the full breadth of research into *physis* and would emphatically shape the philosophy and observation of nature (Karafyllis/Lobenhofer 2017: 13–15). His most relevant work on this subject is the *Physics*, whose title already points to our concept. The title itself derives from an adjective indicating that which belongs to the realm of *physis* – in this context the short form of *physike akroasis*, “lecture concerning *physis*”. One of the basic questions explored by Aristotle in this work is the origin of motion, which he

understands in the broad sense of any change, be it qualitative, quantitative, essential or local (Althoff 2005). Both that which always keeps a constant form (as the stars of the firmament do, according to Aristotle) and that which moves in changing form (such as the sub-lunary realm, see Föllinger 2005) are considered in a variety of ways – be it in terms of the different causes underlying their movements, or in terms of the fundamental concepts of place and time (Wieland 1992, especially 231–334). We are fortunate that a large number of Aristotle’s detailed studies of the animate *physis* have been preserved: alongside the *Historia animalium*, his great zoological treatise, and several special studies, such as *De motu animalium* (“The Movement of Animals”), *De anima* (“Of the Soul”) is particularly worthy of mention. In this text, which also belongs to the greater realm of *physis*, Aristotle describes the “principle of life” (*psyche*) as it can be found in different degrees of complexity in *physis*, namely as the “soul” of plants, animals and humans. His writings on cosmology can also be categorised as observations of *physis*. In *De caelo* (“On Heaven”), for example, he raises questions about the boundedness or infinity of the cosmos (I, 5–7), about the possibility of other worlds (I, 8–9), and about the position of human in the universe as a whole (II, 12, especially 292b1–5). A fundamental feature of his observations on *physis* are the reflections on the *stoicheia*, the elements (here Aristotle draws on the *rhizomata* or “roots” of Empedocles), which in turn are construed as combinations of the basic qualitative pairings hot-cold and humid-dry. He describes the dynamics of the world as a cyclical merging and divergence of the four elements on the basis of their qualities (fire: hot-dry, air: hot-moist, water: cold-moist, earth: cold-dry). The movement of these elements is enclosed within a further, unchanging body, the famous fifth element (*quinta essentia*) or “ether” (Wildberg 2011). In this context, contemplation of nature leads to the talk of the divine, which for Aristotle is necessarily unchangeable (*De caelo* 279a32 f.). Indeed, one can say that when Aristotle refutes the view that there is any other motion besides the circular movement of the universe he places *physis* close to the divine itself. Such a second motion would be pointless, as the two would

either cancel each other out or – if one of the two motions predominated – a body would exist to no purpose. Such futility, however, would contradict a principle he repeatedly emphasise, namely that *physis* does nothing without purpose, nothing in vain. Here the principle is extended to include the element of the divine: *ho theos kai he physis uden maten poiusin*, “God and *physis* do nothing without reason” (271a34). It can also be inferred from this text that the movement found in *physis* has a *telos*, a “goal” and an “end”, that it does not extend into the infinite (*apeiron*) (277a28) and that *physis* always achieves the best of what is possible (288a4). Within this all-nature, the highly complex creature which is the human being strives by means of its manifold motions to emulate – like the motion of the planets – the ideal of the uniform and incessant movement of the First Heaven (292b9).

Not only here but also in other writings of Aristotle one finds detailed discussion of *physis*, for instance in the *Metaphysics*. This text – which only enters into apparent opposition to physics due to its post-Aristotelian designation as “meta physics” (in the original sense it was simply the treatise which “came after physics”) – actually shares with the *Physics* the same fundamental question of the why of being, which it attempts to solve with the figure of the “unmoved mover” (Fink 1957: 233–245; Wiplinger 1971). Already in the first sentence of the *Metaphysics* it says that all humans strive “from their *physis*” for knowledge (980a22). The same dative *physei*, not to be understood trivially, reappears in the famous statement in the second chapter of the first book of the *Politics* where humans are declared to be *physei politikon zoon* (1253a3). It is by no means necessary to interpret this passage in such a way that humans strive out of blind natural compulsion to form a community. It can also be interpreted in such a way that humans are given the task of achieving their complete being through the creation of community, since their *physis* can only find its fulfilment in a well-established state (Rapp 2016; Langmeier 2018: 43). In this context, it is worth mentioning the phrase *para physin*, “against nature”, sometimes used by Aristotle: in his analysis of different economic systems and in his description of the emergence of money he says that making interest is “most contrary

to nature” (*Politics* I, 10: 1258b7 f.). *Physis* also plays a considerable role in Aristotle’s ethical writings, since an exploration of the human *physis* is central to the action by which humans may achieve a happy life (Müller 2006).

4. The Atomists, Stoics, Neo-Platonists and Christian authors

Quite different conceptions of *physis* are to be found in other Greek traditions of thought, whose theoretical foundations, however, are less well preserved than Plato’s and Aristotle’s statements on the topic. Let us briefly mention the so-called Atomists, whose thinking found a continuation in the writings of Epicurus. For them, the world that appears is the result of an interplay between the void and the eternal movement of the “indivisible”, the atoms. This doctrine, most often associated with the names Democritus and Leucippus, is known mainly from the critical reactions to it in Aristotelian writings. It was supplemented by Epicurus in the light of developments in philosophy, in order to explain phenomena such as freedom of will. This was done by means of the theory of atoms’ “ability to deviate”, the *parenklisis* (Schmidt 2007).

Diametrically opposed to these views is the ancient Stoic philosophy, in which *physis* can be seen as an expression of the Logos, the rational, divine principle of order of the whole world (essential evidence of the physics of the early Stoics is gathered in Arnim 2004, Volume 1: 24–41 and Volume 2: 111–298). According to the doxographer Diogenes Laërtius, the Stoics call *physis* that which holds the cosmos together, as well as that which makes everything grow on earth (Diogenes Laërtius 7, 148, see Long/Sedley 2006: 317). The cosmos, which in its entirety is regarded as the essence of God, is completely determined in its rationality, passes away at regular intervals and emerges anew (Long/Sedley 2006: 327–333). Particular importance is attached to the concept of the “world fire” or “world conflagration” as an expression of the intelligent control of nature by the Logos-God: building on the biological observation that heat is indispensable for life, the Stoics concluded from the microcosmic significance of the hot element its macrocosmic

significance. For them, fire is the ultimate among the four elements inherited from the tradition. As divine life heat or – as Chrysippus calls it – *pneuma* (“breath”), it passes through and controls the entire *physis* and is responsible for the cohesion of all things and living beings. Each of the phenomena described in the earlier philosophy, such as the capacity of the soul, are given materialist explanations by the Stoics, ultimately based on their assumption of a divine world soul (*psyche tou pantos*, Latin *anima mundi*) running through all matter. However, it is remarkable that, unlike other thinkers such as Aristotle, the Stoics do not ascribe this *psyche* to plants, but instead view their existence as an effect of *physis* (Long/Sedley 2006: 373). For this rationalistic theology the knowledge of divine *physis* is also of central importance for ethics, since according to the famous Stoic principle it is necessary to arrange one’s life in accordance with (“following”) *physis* (Schofield 2003: 239–246).

An engagement with the physical theory of the Stoics can be found in so-called Neo-Platonism, in particular when it construes *pneuma* as a principle determining the whole of nature. In his discussion of the *physis* of body and soul in his treatise *On the Immortality of the Soul* (Enneads IV, 7 [2]), Plotinus speaks of a *total physis*. It is absurd, he says, that in Stoic theories of the soul’s development from the inanimate, something less produces something higher, such as in the Stoic understanding of *hexis* (that which holds together bodies, the *psyche*, the principle of life). On the contrary, it is to be assumed that before all of this there is *nous*, reason, which is the cause of *psyche* and then *physis* (IV, 7 [2], 8c). In the same text Plotinus explicitly addresses the priority of reason over *physis*: *proteron ara kai nous kai psyche physeos*, “thus also spirit and soul are prior to the vegetative force” (ibid., cf. Harder 1956: 53). In general, it can be said that Neo-Platonism considers *physis* to be one of the lower stages of development of the One (these stages are characterized by a progressive decrease in intensity of being): the world soul posits *physis* as one of its “expressions”, to use a concept from Plato’s *Timaeus* (Halfwassen 2004: 109 f.; for the position of *physis* in Plotinus’ ontology see Leinkauf 2018: 60–65; for *physis* in the late ancient commentators on Plato and Aristotle see Tuominen 2009: 123–157).

However, even in late antiquity the variety of meanings of the term *physis* endures. There is nothing of the limited sense given it by German idealists as merely an “exteriorisation” of reason or the “other” of spirit. Thus it was still possible to talk of the *physis* of God, as the Greek church father Gregory of Nyssa did in his *Homilies on the Song of Songs*. Both the divine nature which lies “beyond all comprehensible thinking” (Langerbeck 1960: 86; cf. Dünzl 1994: 227) and “spiritual and immaterial nature” (Langerbeck 1960: 64; cf. Dünzl 1994: 191) are contrasted in Gregory’s sermons with the *anthropine physis*, human nature (see for example Langerbeck 1960: 61; cf. Dünzl 1994: 187; for a general discussion of *physis* in Christian authors and talk of a divine nature in Philo of Alexandria see Zachhuber 2016: 756–781; for a discussion of nature in early Christian authors see Karamanolis 2013: 60–116).

Any survey of the continuation of Occidental contemplation of *physis* should refer to a corpus of texts known as *Physiologus*. The composite term *physiologos* was already widespread in ancient times and, as the words indicate, refers to those who speak about and present doctrines concerning *physis* (see, for example, Aristotle, *Metaphysics* 992b4). *Physiologus*, a collection of texts dating back to late antiquity, largely comprises fables about animals (along with fables concerning plants and stones) handed down in a range of languages and becoming one of the most widely read and influential texts of the Middle Ages. A continuous theme of these texts is amazement at the manifold phenomena and miraculous processes of nature – such as the pelican mother who tears open her breast to revive with her blood the young she has killed (Schönberger 2005: 10 f.; Nicklas 2013: 234–236) – processes which are then for the most part harmonized with the Christian faith by means of allegorical and moral interpretations (Nicklas 2013). For example, the moral to the story of the pelican runs, “Thus did our Lord speaking through Isaiah say, ‘I have nourished and brought up children, and they have rebelled against me’ [Is. 1: 2]. The Maker of every creature brought us forth and we smote him. How did we smite him? Because we served the creature rather than the Creator” (Schönberger 2005: 11).

This quotation is significant in revealing the historical transition to a view of *physis* qua creation (Greek *ktisis*). Starting from Cicero's and Calcidius' translations of Plato's *Timaeus*, the exploration of self-moving *physis* in the Aristotelian sense becomes subordinated to a contemplation of *natura* viewed as the product of an extramundane demiurge or creator. Nevertheless, at the height of scholasticism the great Aristotelian Thomas Aquinas could return to the idea that nature itself strives for its realization, though for him nature's perfection requires grace: *cum igitur gratia non tollat naturam, sed perficiat, oportet quod naturalis ratio subserviat fidei*, "since grace does not abolish nature, but completes it, it is proper that natural reason should serve faith" (Summa theologiae I, quaestio 1, articulus 8, ad secundum, cf. Thomas von Aquin 1982: 25).

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