

Contexts of Nature according to Aristotle and Descartes

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From the point of view of the history and philosophy of science, the relationship of Descartes' to Aristotle's concept of nature has not been grasped in an entirely satisfactory way. In this article, the two concepts will be subjected to a comparative analysis, beginning with the outstanding feature that both concepts of nature are characterized by a contradistinction to the non-natural: Aristotle separates nature and technology; Descartes opposes nature to thinking. My thesis is that these meanings have found privileged application in specific

contexts of experience: the field of application especially suitable for the Aristotelian concept is the experience of everyday life, while for the Cartesian concept it is subjective experience. Historically, the relationship between meaning and experience is of help in understanding the conditions in which the two concepts arose. The topical relevance of the concepts to modern society is a consequence of the continued existence of the favored contexts of experience. Roughly stated, we sometimes still perceive in an Aristotelian way and at other times think in a Cartesian way.

The replacement of the Aristotelian concept of nature by the Cartesian one is a characteristic feature of modern science. Until the end of the Middle Ages the Aristotelian concept of nature was a guiding idea of scholastic philosophy of nature. In the course of the renaissance of Thomistic philosophy in the second half of the 16th century its influence increased considerably. Descartes then formulated a contrary position which represented the rationalist conception of modern science.

From the point of view of the history and philosophy of science, the relationship of Descartes' concept of nature to Aristotle's has not been grasped in an entirely satisfactory way (cf. for the history of science Dennis Des Chene, *Physiologia. Natural Philosophy in Late Aristotelian and Cartesian Thought* (Ithaca/London: Cornell University Press, 1996) and Marleen Rozemond, *Descartes' Dualism* (Cambridge/London: Harvard University Press, 1998); for the philosophy of science Ansgar Beckermann, "Aristoteles, Descartes und die Beziehungen zwischen Philosophischer Psychologie und Künstlicher Intelligenz-Forschung", in Ernst Pöppel (ed.), *Gehirn und Bewußtsein* (Weinheim: VCH, 1989). One of the things that have not been settled is the scope of Descartes' break with basic Aristotelian views, and the extent to which he relied on or adopted them. Neither has it been satisfactorily explained why the two concepts still enjoy such currency today.

In this article, the two concepts will be subjected to a comparative analysis, beginning with the outstanding feature that both concepts of nature are characterized by a contradistinction to the non-natural: Aristotle separates nature and technology; Descartes opposes nature to thinking. In forming a contrast, the concepts divide a large portion of reality into a natural and a non-natural part. My thesis is that these meanings have found privileged application in specific contexts of experience: the field of application especially suitable for the Aristotelian concept is experience of everyday life, while for the Cartesian concept it is subjective experience. Historically, the relationship between meaning and experience is of help in understanding the conditions in which the two concepts arose. The topical relevance of the concepts to modern society is a consequence of the continued existence of the favored contexts of experience. (I elaborate upon the connection between concepts of nature and experiences using the example of the applicability of Aristotle's and Descartes' concepts in *Natur, Technik, Geist. Kontexte der Natur nach Aristoteles und Descartes in lebensweltlicher und subjektiver Erfahrung* (Berlin/New York: Walter De Gruyter, 2005).)

Aristotle's distinction between *physis* and *techne*

Aristotle distinguishes between *physis* (nature) and *techne* (technology/art). For him, *techne* is not a subject for research in nature. *Techne* is "against nature" and allows for the mastery of nature (Pseudo-Aristotle, *Mechanical Problems*, 847a14 and 21f., in Aristotle, *Minor Works*, trans. W. S. Hett (Cambridge, MA/London: Harvard University Press, 1936)). This separation corresponds to the fact that, in Aristotle, the study of nature depends above all on the observation of phenomena but not on technical means.

The main criterion for applying Aristotle's distinction is the criterion of self-movement. The classical place for its definition is the second book of the *Physics*, where Aristotle admits only those things in nature which "have within themselves a principle of motion and of staying unchanged" (Aristotle, *Physics* 192b13f.). On the other hand, *techne* applies to those things which might exist on account of "other causes" (ibid., 192b8f.). The indefiniteness of the causal properties of non-natural things contrasts with the fixed characteristics of the natural ones. Following Wolfgang Wieland (*Die aristotelische Physik*, (Göttingen: Vandenhoeck & Ruprecht, 1962)), I would like to interpret the singular in the definition of natural things as a minimum condition: what has only one inner principle permanently in itself must be reckoned within the natural realm. The self-movement of natural things can be activated from the outside. The dependence of organic life on sunlight

may be an example of this. Consequently, both a wild flower and a cultivated flower are natural plants.

Aristotle's characterization of self-moving nature is based on a contradistinction to the productions of handicrafts. Man-made constructions have an inner principle only because they consist of self-moving elements. However, this self-movement is not the cause of the artificial form of crafted things. Artificial forms arise only because human beings have effects on natural substances.

The unshaped material naturalness of crafted things is opposed to their artificial form. Nevertheless, this is not the only difference between natural and artificial forms. The technical, above all the product of handicraft, is also distinguished from plants and animals in terms of the forms of growth and lively movement. So the difference between having an inner principle and not having one is deeply related to the form that is essential to the specific thing.

The distinction outlined so far is still very incomplete. Many important questions, such as the poietic and teleological structure of nature, are not even mentioned. My reconstruction of the Aristotelian concept assumes that these aspects are only to a certain extent implied in the criteria for the difference of nature and technology. This rudimentary characterization of the Aristotelian distinction is nevertheless sufficient for preliminary comparison with the Cartesian concept.

Descartes' dualism between *res extensa* and *res cogitans*

Descartes' concept of nature can be understood as a counter-proposition to the Aristotelian one. Descartes revokes the classical opposition of *physis* and *techne* by assuming, instead, a dualism between *res extensa* (nature) and *res cogitans* (thinking).

The earth is now subordinated to this dualism. As the criterion for distinguishing between the two spheres, Descartes introduces the clear and distinct recognition of *res extensa* in its difference from *res cogitans* (Descartes, *Meditationes de prima philosophia*, Meditation VI, paragraph 9, in *Œuvres de Descartes*, ed. Charles Adam and Paul Tannery (Paris: J. Vrin/CNRS, 1964-71), vol. VII, p. 78). Remarkably, for Descartes *res cogitans* has neither extension nor place. By contrast, all other things are in a spatial relationship and subsist in nothing else than in their extension. All the qualities which we observe in natural things – their hardness, their colors and so forth – have their origin in differences of shape.

Descartes turns the relationship between Aristotelian *physis* and *techne* almost upside down. *Techne* (technology) is not merely a part of nature: rather, it is that part which is best suited for the exploration

of nature (Descartes, *Principia Philosophiae*, Book IV, article 203, in *Œuvres*, vol. VIII-1). This additional feature results from the mathematical character of *res extensa*. In Aristotle the living represent the paradigm of natural investigation. Now artificial devices take their place. This reversal of *techne* is the most important consequence of the Cartesian concept of nature.

Res cogitans has priority over *res extensa* insofar as it is the origin of knowledge about the principles of natural science. The extended is not able to recognize itself. The basis for this lies in the circumstance that extension is a category to which nothing corresponds in perception – as Descartes remarks in the *Meditationes* (Descartes, *Meditationes*, Meditation II, paragraph 12, in *Œuvres*, vol. VII, p. 31). Only by thinking do we realize the essence of extension. We can acquire this knowledge most distinctly without receiving any information from the outside world, if we withdraw into isolation and reflect on our own thinking.

Comparison of the two definitions

The concept of thinking characterizes the position of the subject in modern rationalism. In Aristotle we find no related definition. Nevertheless, the extensions of the two concepts of nature can be compared as lists. Both concepts share the extraterrestrial viewpoint, from which they count the following as belonging to nature: corporal substances, their combinations, the stars and planets, the plants and the animals as well as human beings in all the qualities they share with animals. Differences occur in the assignment of human beings and artificial objects to a list. Aristotle conceives of human beings essentially as natural beings who create non-natural artificial objects. Descartes splits the essence of the human being into a non-natural and a natural part and adds artificial objects to the natural. Now thinking is the non-natural, which has the ability to create artificial objects that count as natural.

The definitions are related positively only to nature and not to the part of reality which is separated from it: self-movement in Aristotle and extension in Descartes. They are necessary and sufficient conditions for assigning an object to nature. But only Aristotle ascribes to nature both its features and the knowledge of those features. Descartes, on the other hand, strictly distinguishes between the two: the ability to recognize extension as the essence of nature is the ability of non-natural thinking.

I would like to note that both authors maintain more than one concept of nature. Different meanings of the term “nature” are present in their works. The concepts I refer to here indeed play a central role in the

natural philosophy of the two authors, but they make up only a limited part of the meaning of the whole concept of nature.

After having presented a minimal reconstruction of the main distinctions between nature and non-nature, I would like to discuss the privileged contexts of experience to which the two distinctions are related. By "experience" I mean not so much the cultural contexts of the origin of the distinction, but rather the conditions of their plausibility over a long historical period – that is, the processes of gaining knowledge and the forms of the secure possession of ordered content. Is it possible to find types of experience that are as distinct from each other as these two concepts of nature? What sort of empirical knowledge is necessary to identify the criteria of the natural, as suggested by Aristotle and Descartes?

Experience of everyday life as the context for the Aristotelian distinction

As Descartes himself notes, Aristotle's concept of nature is mainly concerned with everyday experience (Descartes, *Œuvres*, vol. III, pp. 420 and 692; vol. VI, p. 13; vol. VIII-1, p. 35). Descartes distinguishes this experience from scientific experience, which mainly consists in determining the movements of particles so small as to be invisible. Compared with this, the objects of everyday experience have the characteristic feature of perceptibility.

Indeed Aristotle clarifies his distinction by means of illustrative examples. Primarily, perceptible living beings and materials which underlie technology are a part of nature. The essential meaning of his concept of *techne* arises mainly from man-made products (e.g. beds, clothing or houses), from their fabrication and their use in human life. Obviously the natural and the artificial are distinguished from each other by differences in their manner of movement and their outer form.

Adopting a distinction that is social-phenomenological and ideal-typical, I conceive of everyday life, to which Aristotle's nature concept is properly applicable, as a limited realm of experience of direct perception. In everyday life, awareness is focused on dealing practically with familiar things and persons as they are outwardly perceptible. Everyday-life experience can be defined by reference to a catalogue of criteria that are necessary and jointly sufficient. These include (a normal adult's) attention focused in perception, an unprofessional manner of action and an integrally structured background knowledge (cf. Edmund Husserl, *Die Krisis der europäischen Wissenschaften und die transzendente Phänomenologie* (Den Haag: Nijhoff, 1976); Alfred

Schütz and Thomas Luckmann, *The Structures of the Lifeworld* (Evanston, IL: Heinemann, 1973)).

As Stephen Toulmin put it, the essential features of the Aristotelian concept of nature may be understood as the "generalization of everyday-life experience" (*Voraussicht und Verstehen* (Frankfurt a.M.: Suhrkamp, 1981), p. 62).

Subjectivity as the context for the Cartesian Dualism

By contrast, the privileged context of experience for Descartes' concept of nature is one's own inner self experience. From the point of view of cultural history, this approach reflects the initial release of the individual from preordained frames of reference. The individual turns away from everyday life toward her or his inner world, which is present only mentally. The inner world is the domain of more or less conscious thoughts, sensations, feelings and moods – a field of experience in which the bodily, the mental, and their combinations occur. I call this context of experience "subjectivity" and define it by the criterion that only the person concerned can have privileged access to it (cf. e.g. William Alston, "Varieties of Privileged Access", in *American Philosophical Quarterly* 8 (1971) 223-241). It is very typical that for the purpose of investigating this subjective experience, Descartes not only turns away from the everyday-life world but also from all practical matters.

I would like to argue that Descartes does not contrast the whole of subjective experience with nature. Only clear and distinct conceptual thinking, which refers to something else or reflexively to itself, is unreservedly non-natural. By contrast, one's consciously experienced perceptions and sensations and some of one's feelings and moods form, in Descartes, a mixture of nature and thinking. From the viewpoint of subjectivity pure nature appears to be above all an external object of perception.

Cartesian Dualism divides the human being into two parts. One part consists mainly in physiological processes. Insofar as they are independent of thinking they do not differ from the mechanics of the life processes of animals. On the one hand, thinking can produce deliberate actions and act on the body (via the pineal gland). Hence the world of nature does not form a closed system, but is open to mental influences. On the other hand, human nature affects thinking (e.g. feelings of hunger and thirst, emotions of rage, joy or sadness).

I contend that Descartes effects a partition which is formally the same as that of Aristotle: the corresponding contexts of experience are divided into a natural part, a non-natural part, and a part in which the division is not clear.

Conclusion

Let me summarize the two main differences found so far. Roughly speaking, the two different extensional definitions of nature follow from two different features of objects against specific experiential backgrounds. Perceptual experience, found in experience of everyday life, is a favored condition for recognizing self-movement. In order to be classified, Aristotelian objects must be present and visible. For Descartes, by contrast, thinking defines nature as being extended in the context of subjective experience. One must turn away from every external perception in order to recognize Cartesian nature.

These two contexts of experience are not entirely separate. But in spite of the relationships existing between them, the contrast between them is sufficiently clear. Normally neither context leaves room for the other, and thus we cannot normally participate in both ways of experiencing at once.

In conclusion, let me make a comment on the contemporary applicability of both concepts of nature. It is still possible today to differentiate between the experience of everyday life and subjective experience. In my opinion, the two concepts of nature are still frequently used in those contexts. Of course, in a growing number of cases it is useless and often impossible to differentiate between technology and nature. But we are usually not indifferent to these cases in the perceptible world of everyday life, provided we take note of them. On the other hand, Cartesian dualism is of course almost completely out of fashion. Nevertheless, it is possible to distinguish between the thinking mind and the extended body without sharing the presuppositions of the Cartesian ontological system. The Cartesian problem of the relation of mind and body is not so much ridiculous as unresolved.

To put it crudely, we sometimes still perceive in an Aristotelian way and at other times think in a Cartesian way. Were this not so, it might be impossible for us to acquire even a rudimentary understanding of the two authors' historical texts. Conversely, a closer look at the writings of these authors can still improve our understanding of our own concepts of nature.

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