NATURAL HISTORY

Most medieval writings on this subject are influenced by Pliny, whose encyclopedia of the first century C.E., *Historia naturalis* (*Natural History*), became the model for the genre and the principal source of similar works of late antiquity, including those of Aelian and Solinus. Pliny's massive survey of the lands and peoples of the empire, of which around two hundred manuscripts survive, was a seemingly inexhaustible source of data about animals, plants, and minerals. The origin of properly medieval writing on nature can be traced to the "hexaemeral literature," a group of commentaries on the biblical narrative of the six days of creation. Written by Patristic authors including Basil and Ambrose, and incorporated into the commentaries on Genesis by Augustine and *Bede, these works contain information on living creatures, plants, and animals taken from Greco-Roman sources. In his *On Christian Doctrine*, Augustine (d. 430) envisaged two complementary intellectual programs regarding the study of nature in the context of Biblical exegesis. On the one hand, he enjoined believers to write about animals, trees, herbs, and stones that could be of help in the interpretation of those passages in the Bible in which these things are mentioned. On the other hand, he discussed the broader question of the allegoria in factis ("allegory of things"), by which he meant that not only the words but also the natural creatures mentioned in scripture are themselves signs and as such susceptible of being interpreted. These two projects were actually fulfilled with the development of the medieval encyclopedias. A substantial part of all of them is concerned with natural history. Of the twenty books of *Isidore of Seville’s Etymologies*—a vastly influential encyclopedia of the seventh century—four deal with beasts, geography, plants, and minerals.

Late twelfth- and thirteenth-century encyclopedias such as *Alexander Neckham’s On the nature of things*, *Bartholomaeus Anglicus’s On the properties of things*, and cognate works in the Dominican tradition such as *Vincent of Beauvais’ Speculum naturale* (*Mirror of Nature*) and *Thomas of Cantimpré’s On the nature of things* were mainly devoted to natural knowledge. Insofar as these works drew on Pliny, Solinus, and Seneca—besides many ancient and early medieval works in Latin and Arabic—they embodied the closest approximation to what can be considered as a medieval natural history. It should, however, be borne in mind that the aims and structure of these works were very different from those of their Roman models. For one thing, these medieval treatises were conceived with an explicit religious goal in view. Nature was not the pagan deity of antiquity, nor even the hand-maiden of God in His creation (as was the case in the twelfth-century Platonic works on nature), but "the nature of a thing," expressing that which makes a particular kind of being what it is as the result of having been created by God. The proclaimed purpose of the treatises on the nature of things was to deploy the programs formulated by Augustine. In most cases, minerals, plants, and animals were listed alphabetically within sections which mirrored the medieval taxonomy of natural creatures. For example, Thomas of Cantimpré’s *On the Nature of Things* has six books on animals (quadrupeds, birds, sea monsters, fish, serpents, and *vermes* [worms]), two books on plants (trees, aromatic trees, herbs), and two on minerals (stones and metals). Such classifications, indebted to folk taxonomy and Biblical lore on nature, are quite representative of other works of the same kind. Many of the short chapters devoted to animals end with one or more allegorical interpretations of the beast or bird; the chapters on plants are mainly concerned with their medical uses. In the late thirteenth and the fourteenth century, these works gave way to moralized encyclopedias and collections of exempla. These were explicitly conceived as tools for preaching, and purported to provide interesting stories taken from allegorized properties of animals and plants which could be used to enliven sermons and for moral edification.

Animals, Plants, and Stones

Discourse on natural history, considered as the sum of texts on animals, plants, and minerals, was fragmented in a variety of genres of writing, each of which expressed a
particular attitude to knowledge. All this literature, ultimately derived from antiquity and with roots in popular lore and theological and literary traditions, constituted a complex and fluid system of textual borrowings. In the case of animals, the most representative genre was perhaps that of the *bestiaries. An important difference between bestiaries and works on the nature of things was that in the former what is said about a given animal is in great part determined by the moral and religious teaching which is the main purpose of the work, while in the latter there is a neat distinction between the account of the animal and its interpretation. Technical works on animals comprised the books on hunting—such as The Hunting Book of Gaston Phébus (fourteenth century)—and the rich literature on hawking, with the outstanding example of *Frederick II’s On the art of falconry. There were also texts on animal medicine, either of accipiters or of horses (examples of the latter are the treatises by Jordanus Rufus, Lorenzo Rusio, and *Teodorico Borgognoni). Non-European animals were outstanding characters in the literature of travels to the Far East. Some of these works were accounts of real voyages, such as those of *Marco Polo and the Franciscans William of Rubruquis and John of Plano Carpini, while others were imaginary, like the Travels of *John Mandeville. Fantastic beasts inhabited the literature on exotic lands, including the Latin and vernacular Alexander romances and associated texts. Purely literary works, such as collections of fables and fabliaux, also contributed to medieval lore on animals.

Knowledge about the vegetable world was mainly transmitted through the "herbals, which focused on the healing virtues of a given plant and contained instructions for its collection, preparation, and dosage. Although medieval *pharmacy was for the most part<br>herbalistic, it did not exclude animal and mineral substances. The early medieval Sixtus Placitus’s Book on quadrupeds, for instance, was a treatise on animal drugs and *Hildegard of Bingen’s Physica is a treatise that recapitulates in its nine books the healing properties of minerals, stones, trees, plants, quadrupeds, and fish. One of the first incunabula, the Hortus sanitatis (Garden of Health) (Mainz, 1491), although usually considered a herbal, amounts in fact to an illustrated natural history, with more than one thousand small woodcuts of minerals, plants and animals. As was the case with animals, there is also technical literature on plants, particularly on gardening and *agriculture, such as the treatise of Petrus Crescentius which also has books on animal husbandry, veterinary and hunting. With respect to the mineral world, the characteristic genre was the "lapidaries, mostly dealing with precious and semi-precious stones.

The medieval menagerie, as represented in texts, pictures, and sculptures, was populated with many wondrous and some monstrous beings. For a number of reasons, animals were more the vehicle of legend and imagination than plants. This is explained by the fact that bestiaries relied on allegory, while herbals served a practical purpose (although the technical literature of hawking and hunting is quite sober in this respect). Many of the manuscripts containing texts on natural creatures were illustrated. In the thirteenth century, visual images of birds, beasts, and plants in manuscript illuminations and sculpture became more "realistic" through the growing development of techniques of "realistic" depiction.

**Natural History and Natural Philosophy**

Besides the literary genres mentioned so far, it should be noted that the Aristotelian and pseudo-Aristotelian works on animals and plants gave rise to a strong tradition of commentary. *Albertus Magnus (Albert the Great) commented on Aristotle’s books on animals and wrote original works on minerals and plants (the pseudo-Aristotelian On Plants was translated and commented on by *Alfred of Saresschel). One of the remarkable aspects of Albert’s work is that he incorporated into his Aristotelian commentaries works which pertained to other genres of writing: a lapidary, a herbal, and a dictionary of animals. Taken as a whole and with his short treatise on geography, this set of books constitutes an attempt to deal with the three kingdoms of nature from the point of view of natural philosophy. In order to include an inventory of created beings into his Aristotelian project, Albert tailored and modified his materials. While he claimed that these things were not properly philosophical, nonetheless he used them to enrich the Aristotelian commentaries with a concern for particular species. During the thirteenth century the Dominican friars became engaged in a common and energetic inquiry into nature. It has been argued that the ultimate goal of this activity was to provide stabilized meanings to the interpretation of nature attuned to the orthodox teachings of the Christian church. The resulting works cover a wide spectrum: from the encyclopedia of Thomas of Cantimpré, akin to natural history, to the natural philosophical commentaries of Albertus Magnus.

See also Agriculture; Aristotelianism; Bestiaries; Botany; Encyclopedias; Geography, chorography; Illustration, scientific; Mineralogy; Nature: the structure of the physical world; Pharmaceutical handbooks; Religion and science; Thomas of Cantimpré; Travel and exploration

**Bibliography**


NATURE: DIVERSE MEDIEVAL INTERPRETATIONS

The concept of Nature is Greek in origin. The word for Nature is *Physis. There is considerable debate about the meaning of this word. For Aristotle, its original meaning seems to have been the coming to be of growing things. Aristotle himself provides a more detailed definition of the word in his account of the fundamental concepts of *Physics. The Latin term *Natura as a translation of *Physis signifies “to be born,” or birth. And after about 1255 Aristotle would be institutionalized in the university learning of the day as the “authority” in philosophy: *Philosophus. Earlier Neo-Platonic interpretations of Nature would be overshadowed for the academic philosophers but would persist and be revived by Marsilio Ficino in the fifteenth century. In the early fourteenth century, Petrarch in *The Ascent of Mont Ventoux would present a more naturalistic and humanistic perception of nature.

To read modern philosophical commentary, however, the reader is left with the impression that the Middle Ages lacked a concept of Nature. Heidegger holds that the Latin translation of the Greek word “Physics” as “Natura” led to a loss of meaning. Pierre Hadot holds that the Middle Ages witnessed a divorce between philosophical discourse and a way of life. Thus, even Platonism and *Aristotelianism “were reduced to the status of mere conceptual material which could be used in theological controversies.” Philosophy is represented as the servant or even the slave of a superior theology or wisdom. Moreover, *Nature and *Man in the Middle Ages, Alexander Murray argues that, despite the literature on this concept, there was no concept of nature in the Middle Ages.

If this is all that can or should be said about the concept of Nature in the Middle Ages, perhaps one ought to close the book on the subject. There are problems here, however. First, translation is not just the story of fundamental loss of meaning. Second, among the significant Philosophers as distinct from what *Roger Bacon calls the “common students” of philosophy, there was a keen sense for the Greek and Latin meanings of the word “Nature.” Is there a kernel of truth in the views of Heidegger and Hadot? Yes, there is. For Augustine, who is a major source for medieval thought, and for *René Descartes who is commonly seen as the “authority” or founder of modern philosophy, philosophy itself is primarily concerned with the following subject-matter: God and the Soul. In such a view of things, Nature as such, as a primary principle of change and motion, disappears out of view or at least becomes a matter of secondary consideration. God is the truly creative principle and created things are caused or produced by God.

This curtailment of the pagan Greek and Latin scope of the word “Nature” can be seen in the apologetics of Latin writers such as *Prudentius, Lactantius, and Ambrose. For Prudentius, Nature is the servant of God’s handiwork. Nature is both a pro-creator and a sustainer of humanity. She assists in the creativity of God. Nature herself does not have a “moral authority”; she can only serve, not judge. In Lactantius, one notices the contrast between the art/intelligence of the divine creator and what is created, namely, Heaven and Earth. For Ambrose, nature is the work of God, is subordinate to God, but is also the pro-creator of the birth of natural things. Natural things follow a Law of Nature which has been ordained by God.

Personification

Still, the thinkers of the Middle Ages did not quite forget Nature (*Natura). And rather than being the “servant” or “slave” of a superior wisdom, as Hadot implies, Nature (*Natura) as the personification of that wisdom had the status of a Goddess. Hence, if Nature is a servant, she is no mere subordinate. She will have to be Pro- or Co-Creator. Nevertheless, with the institutionalization of Aristotle in the thirteenth century, this aspect of Nature as divine would gradually give way to a more “secular” and scientific understanding. And much of the later Francis Baconian masculine birth of time will be prefigured in this philosophical Aristotelian understanding of nature in Latin philosophy. In this world, nature as feminine has been abolished as an important concern to philosophy.

To understand the concept of Nature in the Middle Ages, it is important to understand the origins and uses of this concept. Four thinkers are fundamentally important for the development of the concept. They are Augustine, *Boethius, *Pseudo-Dionysius, and *John Scottus Eriugena. They were supplemented by various texts having a Platonic or Stoic background.

Even Augustine did not altogether exclude Nature. In his important *De doctrina christiana, he retains a strong distinction between natural and conventional meaning. Nature is something to be explored and understood by means of “number, weight, and measure.” To gain a sense of the Greek meaning of Nature as understood in the early Middle Ages, however, one needs to turn to *Boethius, *Pseudo-Dionysius, and Eriugena.

*Boethius presents his definition of Nature in *Contra Eutychen: “Nature, then, may be affirmed either of bodies alone or of substances alone, that is, of corporeals or incorporeals, or of everything that is in any way capable of affirmation.” Since, then, nature can be