

## Preface

I started working on this book while teaching an undergraduate seminar on animals in Antiquity at Northwestern University in winter 2014. A Loeb fellowship allowed me to take time off from teaching to pursue this study. I am very grateful to the Loeb Library Classical Foundation for giving me this opportunity. During this time I have benefited from the support of numerous colleagues and friends. I want to express my sincere gratitude to Richard Kraut for his warm encouragement and kindness in the early stages of this project during my time at Northwestern University, Giulia Sissa for her long-standing support and precious advice, Jean-Claude Picot for commenting on chapter 2 and his remarks on Empedocles' editions, and André Laks for reading chapter 5 and discussing my approach to plants' soul in Diogenes' doctrine. For their valuable comments I also want to thank the members of the editorial committee of the International Pre-Platonic Studies Series at Academia Verlag: Rafael Ferber, Barbara Sattler and especially Livio Rossetti, with whom I had the opportunity throughout the past year to discuss different aspects of this manuscript, including the introduction. I am also grateful to Aileen Ajootian, Mauricio Fuks, Enrico Gaz, Mali Ishtewi, Seth Jaffe, Hamid Ben Malek, Alexis Malliaris, Agis Marinis, and Jenifer Presto for their help and support. Finally, I want to thank the staff members of the Blegen Library of the American School of Classical Studies at Athens for their generous assistance, and, in particular, Andrea Guizzetti and Kostantinos Tzortzinis.

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## Introduction: Beyond the Human

Human beings were at first (*kat' arkhas*) similar (*paraplēsios*) to a different animal (*heteron zōon*), i.e. to a fish (*ikhthys*). (Anaximander)

It must be thought that things that are born ensouled (*empsykha*) belong to the same race (*homogenē*). (Pythagoras)

Earth and water are everything that comes into being and grows. (Xenophanes)

And he teaches the origin of the things that are born and are destroyed, all the way to the parts of animals. (Parmenides)

In the late 1950s, coincidentally around the same time, Guthrie and Havelock provided the first extensive discussions of Presocratic theories about life's origin and its development into multiple forms. They touched on essential aspects of such theories, but also inaugurated an influential line of interpretation, focusing on the human, that this book aims to rectify. Havelock remarked on the continuity of all organic life, underscoring that while plants are “the prototype of all organic life . . . man is not merely just an animal, but ultimately a variant of a plant.” In commenting on Anaxagoras he also emphasized the centrality of nature and the “equality” intrinsic in its creations, calling attention to “the protean capacity of an elemental nature to evolve all-various forms of life, from the sunflower to the scientist.”<sup>1</sup> In other words, for Havelock, interpreter of the Presocratics,<sup>2</sup> one should see “evolution” in a sunflower as well as in a scientist,

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Throughout the book, ancient fragments and testimonia are identified with both the DK numbering and the numbering of textual units collected in the “Sources” section of this volume. Such concordances are expressed by the formula DK (=), e.g. DK 21 B 29 (= 06.02). When a given doxographer is mentioned in the main text (or that of the footnote), he or she will appear in the system of identification of the footnote DK/ (=), e.g. DK 12 A 11/Hippol. *Ref.* 1.6.6 (= 03.02). In addition, the section “Sources” includes also the concordances with the Loeb edition of the *Early Greek Philosophers* by André Laks and Glenn Most, from which, when not otherwise indicated, all translations of the ancient evidence are taken.

<sup>1</sup> Havelock 1957, 109-10, 111.

<sup>2</sup> Havelock devotes a chapter to the Presocratics (1957, 104-124) within a larger project that aims at showing the presence of liberalism in ancient Greek political thought. Harshly criticized by

for they are “equally” complex forms of life. On the other hand, Guthrie reviewed the several instances of Anaximander’s theory that life originated from earth and water heated by the sun and its progression to Aristotle’s theory of spontaneous generation,<sup>3</sup> and he too, like Havelock, stressed “the idea of kinship of all life” in Presocratic thought.<sup>4</sup> But Guthrie and Havelock did not pursue this fundamental notion by investigating how (or whether) it affected the Presocratic conceptions of the different forms of life within the framework of their inquiry into nature. In other words, was such a “kinship”<sup>5</sup> among living beings actually operative for the Presocratics “still now,” in all forms of life in the way an animal, a plant, or a human reproduces itself, senses the world and lives in it? And, even more importantly, was the notion of a common, natural origin for all living beings representative and, at the same time, foundational of a certain idea on living beings and life that characterized the Presocratics’ inquiry into nature?

Neglecting this inquisitive path, which would clarify the Presocratics’ mode of thought and integrate the nature of the extant evidence,<sup>6</sup> Havelock and Guthrie instead pursued their own interests in the human.<sup>7</sup> They remained, so to speak, close to Plato, whom we will soon discuss. And, in doing so, they turned

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Strauss (1959, 390-439) and subsequently neglected by scholarship, despite his Pindaric flights Havelock has pinpointed some crucial aspects of the Presocratics’ understanding of life. In addition to the kinship of life, these elements include the importance of the plant as a model for understanding other manifestations of life, and the relevance of animal bodies and their organs as “natural” outgrowths and as determinant—in the case of the hands—in providing the development of human intelligence.

<sup>3</sup> See Aristotle’s *History of Animals* (3.539a17-25) and *Generation of Animals* (5.762a8-35).

<sup>4</sup> Guthrie 1957, 46-62.

<sup>5</sup> The notion of kinship with which Havelock and Guthrie have interpreted the Presocratics’ account of the origin of living beings is explicitly found in the testimonies that refer to Pythagoras and Empedocles (see DK 14.8a (= 05.08) (for Pythagoras) and DK 31 B 136 (= 10.63) (for Pythagoras and Empedocles)). In the first case, we find the adjective *homogenēs* to qualify all ensouled beings; in the second, *syggenēs* is attached to the irrational animals (*aloga zōa*) in relation to humans. In his discussion of the two basic mechanisms of sensation, Theophrastus goes even further and considers everything that a living being senses by like “a kin” (*ta syggenē*), see Thph. *de Sens.* 1 (= 0.4). Even if the idea of kinship is not accounted for in the testimonies of other Presocratics (besides Pythagoras and Empedocles), it is still legitimate to discuss living beings in terms of kinship inasmuch as they all share the same physical origin. For the “elemental” basis of living beings’ kinship in Empedocles, see Balaudé 1997, 33-37.

<sup>6</sup> In fact, so far, rather than being tied to the question of animals’ origin and kinship and to the Presocratics’ overall interest in the living world, different aspects of animals’ life such as perception and reproduction have been left to discipline-bound and “subject-focused” discussions. On Presocratic theories of perception in general, see, for instance, Mansfeld 1996, 158-88, Caston 2015, 29-37, Rudolph 2015, 36-53; on Parmenides, Heraclitus, and Empedocles, Mansfeld 1999, 326-46; on Empedocles, see Long 1966, 256-76; on Democritus, Sassi 1978, Rudolph 2011, 67-83; on reproduction, see, for instance, Kember 1971, 70-9, on physiological processes, including sense perception and reproduction, Longrigg 1993, 53-97.

<sup>7</sup> Havelock is interested in the connection of human progress with political liberalism, and emblematically calls the *physiologoi*, whose theories he discusses, “anthropologists” (1957, 104-24). Guthrie, on the other hand, is interested in following the transition from myth to reason. In the chapter titled “Kinship of Life,” he makes Pythagoras the major representative of this outlook on life on account of his doctrine of the soul, but does not pursue the consequences such a doctrine had for a comprehension of the different forms of life as related *in this life* (1957, 58-9).

the kinship of life into a marginal notion which, attached to the vision of a common primordial origin, did not become central to their interpretations of the Presocratics' inquiry into life and its forms, and had no relevance to or impact on scholarship's subsequent understanding of the Presocratics' conception of actual living beings. In this way, these authors privileged the human, transferring it back to the center it had occupied for the poets (Homer and Hesiod),<sup>8</sup> and obscuring the Presocratic mode of thought this book wants to restore and bring back to light.

Havelock and Guthrie have not been alone: the anthropocentric approach continues to characterize more recent studies. In her discussion of ancient Greek and Roman theories about human civilization, Blundell defines Anaximander's view of the origin of life as "one of the most bizarre of his theories" and artificially extracts from Empedocles' zoogonies an anthropogony that traces "the rise of the human race."<sup>9</sup> More recently, Lloyd, preoccupied with explaining what defines humans *vis-à-vis* the other animals and with tracing the shifting boundaries of that definition, adopts Vernant's view of Greek sacrifice. Animal sacrifice was an institutionalized practice of the *polis* that asserted a gulf between humans and animals and was instrumental in restoring a temporary, ritual-dependent communion between gods and men. In his discussion, Lloyd devotes only a short paragraph to the dissenting voice of the philosophers: he makes cursory mentions of Pythagoras and Empedocles in relation to the transmigration of the soul and remarks (as Havelock and Guthrie did) on the "kinship of life" entailed by the transmigration concept.<sup>10</sup> But Pythagoras and Empedocles were not the only "dissidents". The human/animal alterity on which Greek sacrifice was founded did not fit the other Presocratics either. On the other hand, still interested in the human and pursuing the subjective, aprioristic nature of any understanding of the human/animal relation, Osborne sees Anaxagoras and Democritus as marking differences between us and the animals and interprets the thought of Empedocles and Pythagoras as extending the "human soul" and its cognitive abilities to the other animals. The way we perceive other forms of

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<sup>8</sup> Both Homer and Hesiod celebrated a world of gods or heroes at whose center sat the human being. Hesiod's cosmogony constituted a divine genealogy whose final establishment mirrored human society and its values, founding them, while the gods were human projections. As for Homer, his similes adopted (and adapted) the natural world to telescope the existence of heroes into a cosmic and often inexorable dimension. In this respect, Clarke remarks that animal similes in Homer are based on the recognition that men and beasts do not belong to "different departments of the creation," and that they share physical, emotional and cognitive apparatuses, as well as the same range of emotions and drives (1995, 146). But while Homer used animal similes to clarify humans' physical and emotional conditions, the Presocratics considered animals in themselves and adopted analogies to show the interconnectedness relating their bodies and, so to speak, living capacities and, ultimately, lives. See chapters 2 and 4.

<sup>9</sup> Blundell 1986, 45. Elsewhere, the author recognizes that in many Presocratic "anthropogonies" humans were animals, but she is interested in pursuing how humans became fully rational beings (70-91).

<sup>10</sup> Lloyd 2012, 12.

life and our (human) position relative to them is not rooted in nature, but instead reflects our understanding of nature. Hence, according to this author, some Presocratics emphasized human/animal discontinuity (Anaxagoras and Democritus), and others continuity (Pythagoras and Empedocles).<sup>11</sup> The point on the subjective fluidity of the human/animal relation is well taken. But were Anaxagoras and Democritus really marking discontinuity between humans and the animals?<sup>12</sup> And were Pythagoras and Empedocles extending to animals the human soul? In Osborne's account, for these two authors animals should not be beaten or sacrificed because they could and might host a human soul (in the case of Pythagoras, that of a friend). But while regarding Pythagoras the assessment on the ultimate ownership of the soul may be ambiguous,<sup>13</sup> the human soul is completely irrelevant to understanding Empedocles' eschatological vision as well as his conception of the multiple forms of life.<sup>14</sup> So the flexibility of the human/animal relation which Osborne points out, along with their continuity in Pythagoras and Empedocles' doctrines, is still built on anthropocentric foundations.

This book takes a different approach than what seems to have become a dominant line of interpretation. Its goal is not to understand how the early Greek philosophers conceived of the human, perpetuating a fundamentally Platonic perspective. This book aims instead to capture how the early Greek philosophers understood the phenomenon of life in the context of their inquiry into nature,<sup>15</sup>

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<sup>11</sup> Osborne 2007, 43-54.

<sup>12</sup> As the discussion of the evidence below will make clear, for both Anaxagoras and Democritus it is more appropriate to speak of an articulation of differences that are grounded on the notion of human/animal continuity rather than to assert a radical discontinuity between human and animal forms of life; see chapter 2.

<sup>13</sup> According to Xenophanes' testimony, Pythagoras claimed to recognize in the voice of the puppy the soul of a friend, but this leaves open the question as to the previous embodiments of that soul [DK 21 B 7 (= 06.08)].

<sup>14</sup> Apart from the fact that Empedocles uses the notion of *psykhē* (soul) only once (DK 31 B 138, not listed in "Sources"), it is fundamental that we understand humans, on the one hand, and animals (and plants), on the other, as deriving from different combinations of the same elements.

<sup>15</sup> I take nature as encompassing the field of "becoming" (*gignesthai*) from a beginning until the present state of the world (and beyond), along with its "laws" and phenomena. There is a question in scholarship as to whether the early Greek philosophers were using a comprehensive notion of nature (*physis*) as we conceive of it nowadays. For instance, Macé (2011, 21-43; 2012, 47-84) [and before him Platzer (1993)] considers "nature" a developing notion that will sediment in the fourth century as a classifier for "natural things" and the world containing them, while in earlier writings, Presocratics' included, these authors point out a semantic gap between *physis* and *phyein*. *Physis* does not indicate a process; rather, it has a distributive function and refers to the characteristics qualifying a given entity and differentiating it from the others [so in Parmenides, who however uses *phyein* for the sprouting of the sky, see DK 28 B 10 (= 09.08)]. Since Macé's argument mainly rests on a discussion of literary sources with a focus on Parmenides and Anaxagoras, endorsing his position would require a systematic analysis of *physis*, *phyein*, and their cognates in the extant evidence pertaining to all the Presocratics, but such an analysis is beyond the scope of this book. Here I use the notion of nature in the sense clarified above, namely as a field of reference for the processes, "laws," and phenomena discussed by the early Greek philosophers. Whether or not there existed a comprehensive notion of *physis* from the outset of early Greek philosophy, already with Anaximander the cosmological processes and likely processes that brought living beings into life were seen in

and, in turn, what type of human/animal relation this “physical” outlook on life decreed. It focuses on the Presocratics’ definition of animal life from a cosmological perspective, manifested in different, interrelated forms—including human beings—and conjoined with an emerging environment which animal life ultimately helps to organize, to which it is vitally connected and in which it thrives and subsists. In other words, this book pursues the interrelatedness among forms of life (humans, animals, and plants) that was inherent in the Presocratics’ conception of a common origin for all living beings and their belief that some of them (e.g., the human and likely the other land animals) came about from a transformation from another kind. And it shows that, far from being an “historical” notion, this interrelatedness was still effective in the way the Presocratics conceived of the current relation among living beings and the differences between kinds.

For although the information is fragmented, its abundance indicates the presence in Presocratic philosophy of a discourse on living beings whose boundaries—given the nature of the evidence—are difficult to ascertain, but whose coextensiveness with the Presocratic inquiry into nature cannot be denied. Whatever specific inquisitive inclination or theory any given Presocratic may have had, the extant evidence—at least regarding the major thinkers—shows a distinctive interest in understanding life in its multiformity (plants included) and phenomena. It also highlights the Presocratics’ effort to relate different life manifestations to one another, and, in turn, to the cosmos. And even more importantly, it does so without pursuing a polarity between humans and the other animals (which will become apparent in subsequent philosophical thought) and without the teleological outlook often inherent in such a polarity.<sup>16</sup> The dominion of *logos* (reason) as a standard of value for life and its forms was yet to come.

A radical shift occurred indeed with Plato, and on that point there is perhaps no better testimony than Socrates’ famous intellectual biography in *Phaedo*. In this dialogue, which somehow chronicles his last hours, Socrates reveals that in his youth he was an avid student of nature. Like the early Greek philosophers,

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terms of *phyein*. For the Milesian used *periphyein* associated to plant imagery (*phloion*) to express the process leading to the formation of sun, moon, and stars [DK 12 A 10 (= 03.01)]. Further, *phyein* was also likely involved in the process that led to the origin of the first animals inasmuch as Anaximander described them as “born” in moisture and surrounded by a thorny bark (*phloion*) that eventually broke [DK 12 A 30 (= 03.03); for the use of *phyein* in the context of living beings’ origins, see DK 68 B 5.2 (= 21.11)]. Thus, if we can rely on these testimonies, at the outset of early Greek philosophy *phyein* qualified a coming-into-being that was spontaneous, intrinsic to the subject of becoming, and prior to sexual reproduction.

<sup>16</sup> Subsequent philosophical thought (Socratic and Post-Socratic) focuses on the human being, his *logos* and virtue as disconnected from the study of the beginning (*arkhē*) conceived of in physical terms. For the meanings of *arkhē* in Presocratic philosophy and its relation with the equally fundamental technical notions of *kosmos*, *physis*, and *logos*, see Barnes 1987, 18–23.

discussed in this book, he dealt with the causes of generation and destruction and pondered why each thing existed. Significantly, in presenting the questions to which he struggled to find a solution, Socrates mentions the organized formation of animals' bodies<sup>17</sup> and the instrument of thinking. Were bodies caused by a phenomenon of fermentation (*sēpedōn*) involving hot and cold? Do people think with blood, air, or fire? Or with the brain?<sup>18</sup> But this set of questions belonged to a juvenile and confusing research agenda that our Platonized Socrates abandoned in favor of a doctrine centered on the human soul and its eschatological dimension to the detriment of the body and the realm of nature. While living, a philosopher should practice death, Socrates claims in *Phaedo*, a paradox he hurries to explain.<sup>19</sup> With it he meant that a philosopher had to separate himself as much as possible from his body, from its desires and fears in order to focus on the soul's reminiscences prior to the present embodiment. In this epistemological/eschatological perspective the inquiry into nature was useless and obsolete. Humans became the focus, and their life on this earth was a mere tool for the pursuit of wisdom and the recollection of the absolutes, while the body was considered a source of distraction from true knowledge and a prison. As for the life of the other animals, it became relevant to understand, and represent, the shortcomings and degeneration of the human soul that, in its embodiments, fell short of its ultimate goal.<sup>20</sup>

To enable the separation between soul and body, the dominion of the one upon the other, and the practice of a philosophical life Plato's Socrates came up with the notion of a partite soul, which triggered, in turn, a chain reaction of "charged" separations: of reason from other cognitive and vital activities (i.e. courage, sensations, desires), of the head from the other parts of the body, and of humans from the other animals. Life along with its forms and capacities became rigidly hierarchical. Reason and the living being that possessed it (the human) triumphed. Not mentioned in *Phaedo*, which turns around the immortal (rational) soul, psychological partition is articulated in *Timaeus*<sup>21</sup> and *Republic*.<sup>22</sup> In both the soul emerges as a composite entity encompassing a ruling part, the rational (immortal) one, and two (mortal) subjected parts, the spirited and appetitive.<sup>23</sup> In the Platonic corpus, *Phaedo* included, a number of eschatologi-

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<sup>17</sup> Plat. *Phaed.* 96b (= 0.6). To describe the phenomenon of animals' bodily organization Socrates uses the verb *syntrephesthai*, which indicates the growth of bodies by the composition of different substances (see LS s.v. *syntrephō*).

<sup>18</sup> Plat. *Phaed.* 96b (= 0.7).

<sup>19</sup> Plat. *Phaed.* 64a.

<sup>20</sup> See, for instance, Plato's *Timaeus* 91-92C (= 22.08), and the list of animals, from asses and similar beasts to ants and bees, in *Phaedo* (81e-82b).

<sup>21</sup> *Tim.* 69C-71D (= 22.06).

<sup>22</sup> *Resp.* 4.440-442d.

<sup>23</sup> The immortality and mortality of the soul's parts are mentioned in *Timaeus*, not in *Republic* 4.

cal myths depicts the destiny of the immortal soul after death<sup>24</sup> completing in this way an influential anthropology that, directed to transcend nature and the body and revolving around reason, was irreconcilable with the perspective and ideas on living beings and life held by the Presocratics.

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The living world the early Greek philosophers strove to account for was pristine, untouched by the ideological separations of Platonic imprint mentioned above. So instead of taking the human being as a paradigm for life, Anaximander, the forerunner of the inquiry into the origin of life, is reported to have claimed that “human beings were at first similar to a different animal, i.e. to a fish.”<sup>25</sup> He also claimed that “animals [zōa] were born by evaporation [*exatmizomena*] from the effects of the sun,” voicing a vision that revealed a fundamental connection of all living beings and that is emblematic of the Presocratic perspective on the living world.

The idea that humans originally almost resembled (*paraplēsius*)<sup>26</sup> fish may well have been peculiar to Anaximander, a primitive spark of evolutionist

<sup>24</sup> See Plato’s *Gorgias* (523a-527a), *Phaedo* (81c-82c), *Republic* (10.617d-721d) and *Phaedrus* (246a-249d).

<sup>25</sup> DK 12 A 11/Hippol. *Ref.* 1.6.6 (= 03.02).

<sup>26</sup> *Paraplēsius* may be Hippolytus’ rendition for another expression originally used by Anaximander (the first literary attestation of this adjective is in the prose of the fifth century; see Hdt. 1.202; 4.128; Thuc. 1.84). In Hippolytus’ testimony this adjective conveys both physical similarity and proximity of existence for fish and “early humans,” a situation that stems from the fact that living beings share the same origin (= 03.02). Besides Hippolytus’, there are four other testimonies about Anaximander’s theory on the origin of living beings, three collected under DK 12 A 30 (= 03.03, 03.04, 03.05), and one from Pseudo-Plutarch [Ps.-Plut. *Strom.* 2/12 A 10 (= 03.01)]. Despite their differences it seems safe to infer that for Anaximander life originated in a very remote time in an aquatic environment at a specific stage in the formation of the world (when the moistened earth was heated by the sun) and likely became differentiated while the world itself achieved definition via the drying up of the “wet lands” (see Kahn 1960, 68-9). While Hippolytus refers to the similarity between the early humans and fishes during this early stage (= 03.02), Pseudo-Plutarch (= 03.01) and Censorinus (4.7) (= 03.04) state that for Anaximander the human being was first begotten from animals of different form (*ex alloeidōn zōōn*) and fish respectively (*sive pisces seu piscibus simillima animalia*), on account of its inability to nourish itself and therefore survive. In the case of the birth from fish, we are told that fishes carried inside themselves the human beings until puberty, at which point young men and women were delivered. On human beings’ birth from fish, see also Plutarch’s ethnographic account [Plut. *Quaest. Conv.* 8.8.4 730E-F/DK 12 A 30 (= 03.06)]. From these sources we can draw two important considerations besides the picture delineated earlier. First, however outlandish the explanation that human beings were begotten from fishes, it shows a preoccupation with connecting life’s origin to its perpetuation. For in being unable to survive after birth, humans are also unable to reproduce themselves [significantly, in Censorinus human beings are said to be born *ad pubertatem* (at puberty)]. Second, in presenting the human being as originally resembling another living being (a fish), Hippolytus seems to picture an original phase in which nearly resembling aquatic living beings coexisted (the ancestors of fishes and those of humans). Indeed, it is remarkable that etymologically *paraplēsius* signifies “flowing by” (from *para* and *plēō*), which may render in Hippolytus’ words Anaximander’s vision of an early stage of life before the current, more definite differentiation (in terms of habitats, bodies and consequent ways of life) among living beings.

thought that other Presocratics might not have shared.<sup>27</sup> But besides the notion of evolution, what appears even more striking in this statement is Anaximander's willingness to consider humans on a par with other living beings, pinpoint a common origin, and articulate differences via similarities. Indeed, if the human being was the product of a transformation from another living being (from which also stemmed the other forms of life), what differentiated it from the original living being and its transformations into other living beings was a complex of differences resting, so to speak, on a shared core. In retracing the history of the natural world, many of the Presocratics who succeeded Anaximander started from the premise that humankind was one of the many forms of life stemming from the same phenomenon: moistened earth heated by the sun.<sup>28</sup> In retracing that origin, they, like Anaximander, adopted a beyond-the-human approach and identified a system of "relations" based on commensurability. In the doxography we find the word *symmetria* (commensurability) used to describe distinct processes such as thought and smell, which were rooted in the natural constitution of animals' bodies, sprung from their interactions with the environment and were made possible by sharing a compatible constitution.<sup>29</sup> But we could make an interpretive leap and expand the semantic capacity and applicability of this notion by extending it to the way the Presocratics considered living beings' existence in the world. Under the inquiry of the early Greek philosophers animals were commensurate with the cosmos in terms of constituents and formation; and likewise, because of their ultimately shared origin and constitution, animals were commensurate with other animals in terms of habitats, ca-

<sup>27</sup> Archelaus and Democritus may have held, however, a similar position. The doxography indicates that for Archelaus all animals (humans included) lived nourishing themselves with mud [DK 60 A 4 (= 18.02)] while according to Democritus human beings "poured from the earth as worms" [DK 68 A 139 (= 21.13)]. Thus the removal from the earth and mud may have led to, or implied, a physical change for the original human beings. On the other hand, evolution may have been involved also in the survival of the members of Empedocles' second zoogony under Love, although in a different narrative than the one endorsed by Anaximander, Archelaus and Democritus [see DK 31 B 60 (= 10.14) and DK 31 B 61 (= 10.15), along with Simplicius' commentary on Aristotle's *Physics* 2.198b27 (= 10.16); see chapter 2]. The evolutionist slant of Anaximander's theory, remarked on by scholars (for instance Burnet 1945, 71), has been challenged by Loenen 1954, 128-32, Kahn 1960, 112-3, and, more recently, Campbell 2014, 239-40, and Gregory 2016, 34-8.

<sup>28</sup> Censorinus adds further information and states that life originated *ex aqua et terraque calefactis* (from water and earth heated by the sun) [4.7/DK 12 A 30 (= 03.04)].

<sup>29</sup> The word *symmetria* and its cognates appear in Theophrastus' discussion of Parmenides' notion of thought, of Diogenes' view of the mechanism of smell, in Plutarch's account of Empedocles' explanation of plants' process of nutrition, and in a testimony about Democritus that relates to the soul [see, respectively, *de Sens.* 3/DK 28 A 46 (= 09.21), 41/DK 64 A 19 (= 20.15), Plut. *Quaest. conv.* 3.2.2 649D/LM EMP. D248/cf. DK 31 ad B 77 (= 10.53), and 58/DK 68 A 35 (= 21.56)]. In addition, Theophrastus uses this notion to explain in Cleidemus' theory the relation between plants' nature and the seasons in which they sprout [DK 62.4 (= 19.03)]. In commenting on Theophrastus' *On the Senses*, Stratton remarks that *symmetria* may represent a "due proportion of heat and cold, each to the other" or a "spatial correspondence" between the subject who perceives and the perceived object (1917, 158, 169). It is therefore a notion that indicates a balanced relation either within the body (or the soul) or maintained between the animal's body, on the one hand, and external objects and environmental conditions, on the other.

capacities, behaviors, and types of life.<sup>30</sup> After Anaximander a decisive impetus toward the knowledge of life and its forms came with Alcmaeon and Parmenides,<sup>31</sup> who dealt with the process of animal reproduction and the physiology of sensation and thought,<sup>32</sup> and steadily continued with Empedocles, Anaxagoras, Archelaus, Diogenes of Apollonia, and Democritus.<sup>33</sup> Because of the relative abundance of evidence, this book focuses on the later Pluralists (Empedocles, Anaxagoras and Democritus) and on the eclectic Diogenes of Apollonia, but occasional references will be made to figures such as Heraclitus and Parmenides.

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<sup>30</sup> In other words, what I call here “commensurability” is a strategy in the approach to the study of living beings that relies on their interrelatedness along with the cosmological perspective that frames it. It leads to a synchronous understanding of the different forms of life in terms of the array of conditions that characterize them, each in its kind (or species). Commensurability can be seen, for instance, in the systematic discussion of animals’ kinds in relation to the compatibility between their specific bodily constitution and the suitable living environment, with the consequent formation of habitats [see the testimonies regarding Empedocles and Democritus, DK 31 A 72 (= 10.12); DK 68 B 5 (= 21.10); DK 68 B5.2 (= 21.11)]; in the systematic explanation of their different sensorial capacities, or lack thereof, along similar lines, through an impact between the body and its parts, on the one hand, and what lies outside, on the other [see Anaxagoras and Diogenes, DK 59 A 92 (= 17.22); DK 64 A 19 (= 20.14) and (= 20.15)]; but we can see commensurability also in Democritus’ consideration of the living being as a small world [DK 68 B34 (= 21.08)]. Such a view of the living being by analogy with the cosmos is legitimated by the fact that the coming-into-being of living creatures is part of the wider process of the becoming of the world and subjected to the same, or at least compatible, physical laws.

<sup>31</sup> On the influence of Alcmaeon’s physiological interests on later philosophical thought, see Longrigg 1993, 62. As for Parmenides, doxographic accounts (besides some fragments) present his ideas on living beings and the cosmos in alignment with those of the later Pluralists. Only recently, however, scholarship has started to take Parmenides’ engagement with natural philosophy seriously. This fact obliges us to consider that the theories of later Pluralists did not (merely) respond to his theory of being (see Guthrie 1965, vol. 2), but that they also continued his discourse on nature. Parmenides’ *logos* on nature is currently the object of a systematic study by Rossetti (in press); earlier studies include Cerri 1999, Bollack 2006, 195-328, Rossetti 2015 (193-216), and Mansfield 2015 [online]. If we follow Theophrastus on Parmenides and compare, at the same time, the doxographic evidence about specific theories (on the position of the earth, the origin of living beings, sexual reproduction, and perception), it is legitimate to trace an intellectual trajectory that begins with Anaximander and proceeds through Parmenides to Empedocles. In relation to the study of nature the doxography presents Empedocles as a follower of Parmenides (D.L. 8.56), while, in a passage from *Studa*, Parmenides features either as a follower of Xenophanes (who in turn is claimed to have followed Anaximander) or, on the basis of the authority of Theophrastus, as a follower of Anaximander (*Sud.* 4.59.11-5). In this respect, it is noteworthy that *peri Physeōs* (*On Nature*) is the title attributed not only to the book of Anaximander, but also to the poems of Parmenides and Empedocles (D.L. 8.56), and also noteworthy that the association between the origin of life and its perpetuation via a study of sexual reproduction first appears in the extant evidence in the thought of Parmenides. It is possible, however, that Anaximander had already dealt with it (see p. 15, n. 26 above and p. 51, n. 38). On the points of contact between Parmenides, on the one hand, and Anaxagoras and Empedocles, on the other, in respect to physical principles see Palmer (2009, 225-317), who surprisingly ignores the theories about living beings and their reproduction. For an attempt to reconstruct the legacy of Parmenides’ *doxa* on Empedocles and connect it to Xenophanes, see Finkelberg 1997, 1-16.

<sup>32</sup> See chapter 2.

<sup>33</sup> Apart from Diogenes, for whom we do not have extant evidence, all these students of nature shared the same belief on the origin of animal life. See p. 28, n. 11.

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True, the extant testimonies and fragments reveal a reflection on how humans became human by a process of natural acculturation, involving for instance a change of diet, the discovery of fire and the *tekhnai*, and the creation of the social organization and the *polis*.<sup>34</sup> Likewise, they reveal a preoccupation with the acquisition of knowledge and the mastery of truth, which pertain only to humans, the only living beings that are endowed with speech and as such are capable of giving a rational account (*logos*).<sup>35</sup> But again this seemingly human centrality appears to dissolve into a beyond-human perspective if we regard the way humans became human and if we reflect on the nature of knowledge, which Xenophanes and Heraclitus problematized and which Parmenides further “radicalized.” The path humans took toward their “civilization” was made possible by the specific conformation of their bodies or by experience, not, importantly, by the intervention of the gods,<sup>36</sup> genetic differentiation<sup>37</sup> and/or by a different psychological make up. For Anaxagoras, among living beings, only humans happened to have hands,<sup>38</sup> so they were able to interact with their habitat in ways that other animals could not and that determined their specific “cultural growth.” In this case, the difference, then, was one of body structure. It did not involve the exclusive possession of discrete perceptual and cognitive “potentialities.”<sup>39</sup> For Democritus, on the other hand, it was experiences and vicissitudes that taught men to do what they do.<sup>40</sup> Overall, differences in intelligence or perception were considered in terms of degrees and in line with an inquisitive politics that was based on inclusion rather than exclusion. In fact, from the extant evidence it appears that a clear rupture between humans and the other creatures came only with Alcmaeon and would remain a rather isolated fact in the history of Presocratic thought. According to Theophrastus, Alcmaeon was the first to distinguish the capacity to think from the capacity to perceive.<sup>41</sup> These issues

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<sup>34</sup> In this respect, the evidence pertains to Anaxagoras [DK 59 B 4a (= 17.03)], Archelaus [DK 60 A 4 (= 18.03)], and Democritus [DK 68 B 5/Diod. Sic. 1.8.8 (= 21.10)], where, admittedly, we do not find the mention of the *polis*, but of the *koinos bios* (life in common); cf. Kahn, 1981, 92-108; Cole, 1990, 5 and, more recently, Betegh, who argues for a more prominent role of Archelaus on issues of *Kulturentstehungslehre* (2017, 1-40).

<sup>35</sup> On the Presocratics’ interest in knowledge, see Leshner 1994, 11-34; 1999, 225-49, 2008, 458-84.

<sup>36</sup> In this respect, the model of the emergence of humans by a natural process, endorsed by the Presocratics, is fundamentally different from the model of creation proposed by Hesiod, where Zeus and the immortal gods are said to have produced the metal races of men (Hes. *Op.* 110-173).

<sup>37</sup> Blundell, 1986, 86.

<sup>38</sup> DK 59 A 102 (= 17.31).

<sup>39</sup> For the Presocratics sensation and thought depended on physical interactions involving the body of the living being, on the one side, and other natural bodies, on the other. In the right conditions and environments all living beings could have access to the same phenomenological experiences (see chapter 3 and conclusion).

<sup>40</sup> DK 68 B 5/ Diod. Sic. 1.8.7 (= 21.10) and DK vol. II, Nachtrag, p. 423, I.17ff/Luria 558 (= 21.14)

<sup>41</sup> Thph. *de Sens.* 25/DK 24 B 1a (= 08.09).

will be addressed in more detail later; here let it suffice to mention that for Democritus human beings learned some of their technical skills from the other animals,<sup>42</sup> a detail that again shows a displacement of man from a hypothetical center and that ties human “cultural growth” to that of other living beings. Non-human animals had their natural *tekhnai* and living habits, which were considered continuous with those of humans.

As for the nature of knowledge, Xenophanes turned it into a totally human affair, unrelated to animals. The path to knowledge was hard, but eventually successful.<sup>43</sup> Heraclitus, on the other hand, criticized the conceited wisdom of Pythagoras, besides his *polymathia*, the knowledge of many things, which he also detected in the thought and work of other Presocratics, namely Hesiod, Xenophanes and Hecataeus. Both Heraclitus and Xenophanes, however, conceived of human knowledge as encompassing all that derives from one or more original principles,<sup>44</sup> thereby seeing connections and relations in a world where there could be only disconnected plurality or a “one-species” (the human) centrality.<sup>45</sup> In other words, the epistemological interest of these Presocratics took the shape of a reflection that, in the footsteps of the Milesians, broke through the human-centered perspective of the poets, or at least potentially had that effect. So Xenophanes’ manifesto of rational theology that if cows, horses or lions had hands they would represent their gods like themselves<sup>46</sup> is striking not only on account of its provocation against traditional religion, but also because, however ironic it may be, it relativizes human perspective and aesthetics by appropriating other animal species with the possibility of having distinctive, legitimate, and equivalent points of view. Along the same lines, it is significant that at the outset of his enigmatic treatise Heraclitus claims to be giving an account (*logos*) of how everything came into being;<sup>47</sup> likewise, he argues that most humans not only are unaware of his account but also would not understand it, because, as we read soon afterwards, humans understand all things in their own particular way. More literally, they have an understanding of their own (*idia phronēsis*), while Heraclitus qualifies his account as common (*xynos*).<sup>48</sup> It is difficult to grasp the full significance of this adjective, which Sextus Empiricus further stresses (and

<sup>42</sup> DK 68 B 154 (= 21.15).

<sup>43</sup> See DK 21 B 18 (= 06.06) [but there is more skepticism in DK 21 B 34 (= 06.07)].

<sup>44</sup> For Xenophanes, see DK 21 B 27 (= 06.01, in relation to all things), and DK 21 B 29, DK 21 B 33 (= 06.02, 06.03, respectively, in relation to things that come into being and grow, and human beings as members of the living world); as for Heraclitus, who stresses the common origin of all things from fire along with the regularity and predictability of change, see, for instance, DK 22 B 30 (= 07.09) and DK 22 B 90 (= 07.11). For a recent assessment of Xenophanes’ cosmology and the position of earth and water within it, see Mourelatos 2009, 138-9 and 156-8.

<sup>45</sup> Given this common perspective, it is puzzling that Heraclitus criticized Xenophanes for *polymathia*. This critique may depend on the fact that Xenophanes was a versatile poet who wrote on a number of topics, besides nature in the manner of the *physikoi*.

<sup>46</sup> DK 21 B 15 (= 06.04).

<sup>47</sup> DK 22 B 1 (= 07.04).

<sup>48</sup> DK 22 B 2 (= 07.05).

clarifies) through the addition of the more frequent equivalent *koinos*.<sup>49</sup> But I believe in this contrast between, on the one hand, the particular (and therefore one-sided) understanding of the many and, on the other, the common (*koinos*) account of Heraclitus, we see an idiosyncratic facet of the beyond-the-human perspective that characterizes the Presocratic theories about life and the cosmos we have discussed so far.<sup>50</sup> And while in the case of Xenophanes this approach emerges in an assessment of the traditional view of the gods, for Heraclitus it systematically takes shape in the wider framework of the doctrine of the opposites and its inherent relativity. True, Heraclitus' common *logos* is a general structure that ultimately transcends all living beings (and not only humans). But it is significant that Heraclitus applies it to the variations in pleasure, habits, and life sustainability among different animals, humans included, appropriating each with its own individual perspective and therefore "equalizing" them. So, when applied to the context of living beings, the beyond-the-human approach led Heraclitus to observe that pigs wash in mud and farmyard birds in dust or ashes,<sup>51</sup> in an implicit, mutual, and additional contrast, we may assume, to humans, who wash in water. He also defined the sea by means of his doctrine of opposites, which he illustrated through the contrary effects of seawater on fish and on men.<sup>52</sup>

As for Parmenides, in his poem *On Nature*, he distinguishes between two types of "knowledge":<sup>53</sup> one comes from the goddess, and the other pertains to the limited horizons of mortals (*brōtoi*). Only the first holds a grasp of truth (*alētheia*). The second deals with what appears and consists in *doxai* (opin-

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<sup>49</sup> Leshner, for instance, interprets *koinos* as suggesting the "real nature" or "deep structure" of the things themselves, but misses considering it in relation to the *idia phronēsis*, mentioned right above (1999, 232).

<sup>50</sup> The contrast between "common account" and "private understanding" should be related to that between waking and sleeping that frames Heraclitus' epistemological and, in essence, ethical prescriptions [see DK 22 B 1 (= 07.04) and DK 22 B 73 (= 07.06)]. Ultimately, Heraclitus' account expounds a common world (namely a world ruled by the principle of *Logos*), which human beings fail to see because they live as if they were asleep. In this respect, see DK 22 B 89 (= 07.07): "Heraclitus says that those who are awake have a world that is one and common (*koinos kosmos*), but that each of those who are asleep turns inside into his own particular (*idios*) world." On sleep and wakefulness in connection with the principles governing the world, see Guthrie 1962, 427-8. Cf. also DK 22 B 114 (= 07.08), where Heraclitus speaks of what is common for all (*xynon*).

<sup>51</sup> DK 22 B 37 (= 07.25).

<sup>52</sup> See DK 22 B 61 (= 07.26) "The sea, the purest water and the foulest: for fish it is drinkable and life-giving; but for humans, undrinkable and deadly". Other examples of animal perspectives include DK 22 B 9 (= 07.23) and DK 22 B 13 (= 07.24). For a compilation and discussion of Heraclitus' fragments that relate to animals, see Viano 1997, 181-206.

<sup>53</sup> Cf. DK 28 B 6 (= 09.02) and DK 28 A 34 (= 09.05). I use the notion of knowledge here on the basis of the goddess's address to Parmenides in which she announces him "you will know the nature of aither . . . and you will know the migratory deeds of the round-faced moon" [*eisēi, eidēsesthai*, respectively DK 28 B 10, lines 1 and 5 (= 09.08)]. With this rendition I endorse Coxon's first edition (1986).

ions):<sup>54</sup> it is the knowledge of nature. Still the goddess consigns to Parmenides an authoritative version with which Parmenides might be able to judge competing *doxai*.<sup>55</sup> Following, like Anaximander and other Presocratics, a trajectory that joins the formation of the world with that of living beings, the goddess promises Parmenides the knowledge of how the things on high came into being: the sun, the moon, the sky, and the stars with their wanderings and positions.<sup>56</sup> Indeed, from Simplicius we learn that Parmenides started his account with the origin of the earth and the celestial bodies<sup>57</sup> and that he eventually discussed how the goddess began “the painful birth and begetting of all” and the mutual attraction of male and female, which allowed the perpetuation of life for all living beings.<sup>58</sup> Here, once again, at the beginning of Parmenides’ *logos* on nature there is no accent on humans, which are included in the wider group of living beings that come into existence via sexual generation.<sup>59</sup> Significantly, in commenting on the grand objects of Parmenides’ account (the earth, the sun, etc.), Simplicius adds the detail that Parmenides’ discussion of perceptible things (*peri tōn aisthētōn*) bequeathed (*paradidonai*) a discourse that moved from “the generation of the things that come into being and that perish *until the parts of animals* [*moria tōn zōon*].”<sup>60</sup> Thus it seems that for Parmenides too, as for Xenophanes and Heraclitus, human knowledge stretches out to embrace the origin of the world and its creatures, tying the perceptible plurality to a primeval

<sup>54</sup> DK 28 B 1, lines 28-30 (= 09.01). The contrast between the two forms of knowledge (*alētheia* and *doxai*) seems to lie in a prior contrast between the intelligible (*noēton*) and the perceptible (*aisthētōn*), accounted for by conventional language. So, at least, the goddess indicates when she invites Parmenides not to give in to the “habit born of much experience” but to judge by reason (*logos*) [see DK 28 B 7 (= 09.03), and Guthrie 1965, 2: 25-6; but also Mansfeld 1999, 332, who however denies that Parmenides here may be referring to the phenomenon of perception because he rightly sees in *glōssa* a reference to language and not to the tongue as an organ of sense]. Yet, as Cerri argues, for Parmenides the *doxai* contain “a certain epistemological consistency” about the phenomena of the world (1999, 184, cf. 242-3). For a synopsis of different approaches to solve the apparent contradiction between the two *logoi* in Parmenides’ poem, and the apparent clash between truth of the first and deceitfulness of the second, see Long 1963, 90-107. The question on these issues remains in fact open (see Mansfeld 2015 [online], and the bibliography there cited).

<sup>55</sup> The names the goddess bestows on phenomena are accurate. The emphasis in Parmenides’ poem on the names (*onomata*) with which humans describe the phenomena of nature and their contrasted arrangement (the list includes “coming into being and passing away, being and not being, change of place and alteration of bright color” [DK 28 B 8, lines 38-41 (= 09.04)]) shows an implicit critique to the use of language in forming opinions (*doxai*). It also further indicates that the authority of a doctrine lies in an accurate choice of words and its inherent effort for definitions.

<sup>56</sup> DK 28 B 10 (= 09.08). Only a few lines are preserved of Parmenides’ *logos* on nature, for a reconstruction of which we need to revert to the doxography (see p. 17, n. 31 above).

<sup>57</sup> Simp. *In Cael.* p. 559.20-25/DK 28 B 11 (= 09.09).

<sup>58</sup> See DK 28 B 12, lines 4-7 (= 09.10).

<sup>59</sup> Human generation comes under focus later with DK 28 B 17 (= 09.18) reported by Galen.

<sup>60</sup> See Simplicius on *Cael.* p. 559.26-27/DK 28 B 11 (= 09.09). In summarizing the content of Parmenides’ *logos* on nature, Plutarch, however, restricts the philosopher’s treatment to human generation (*Adv. Col.* 13 1114B, not listed in “Sources”), but this is in open contradiction with the general context of fr. 12 (= 09.10), where we find the use of the epic adjective for male (*arsēn*) and female (*thēly*) to indicate sexual difference without species qualification, but with the expression *panta* (for everything); on this difficult diction, see Coxon 2009, 372.

source of everything in existence<sup>61</sup>—sun and moon, earth and sky, and every being that comes to life through the union of male and female, animals' body parts included. And in this world full of light and night no living being (*ouden zōon*) is without reason,<sup>62</sup> which dawns on it (filling the gap in the extant evidence and anticipating the foregoing discussion) from a shared physical constitution and the coincidence (or, at least, continuity) of perceiving and thinking.

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This book differs from the studies discussed above in that it starts from a different platform and aims to trace a specific intellectual trajectory that originated and developed with the Presocratics, and eventually reached Aristotle.<sup>63</sup> Before I undertake this task, some methodological remarks are required. Every work of reconstruction necessarily involves a dose of subjectivity and imaginative, at times even daring, interpretation, and all the more so in a situation where, as here, we are left with fragments and testimonies that randomly survive the oblivion of the past.<sup>64</sup> One could ask, for instance, how different our account would be if other fragments, and by other hands, had survived. Would we hold the same view, emphasize the same points? And, further, would we have the same focus and trace the same trajectory? Obviously, the evidence itself and the way it has been transmitted create some limits, and under circumstances like these any account must be somewhat partial, conditioned, on the one hand, by the incompleteness and randomness of the sources and, on the other, by the angle of a given exegesis. Indeed, the very selection of a topic or question, which is part of the overall scope of an intellectual project, unbalances and somehow violates the interpretation of the text in question, bending it to our inquisitive interests. This happened in the studies reviewed above through their focus on the human, and there is the risk that it may also affect the present study. One has to be careful.

The trajectory followed in this analysis of the Presocratics is one suggested by Aristotle in *Parts of Animals*, where he chooses to bypass differences among the early philosophers and instead pinpoints the common denominator of their inquiry into nature: the identification of a material origin and the ensuing devel-

<sup>61</sup> For the doxography, everything for Parmenides comes into being from fire and earth [DK 28 A 24 (= 09.06) and DK 28 A 7 (= 09.07)].

<sup>62</sup> DK 28 A 45 (= 09.22); there is an interesting overlapping with Empedocles who said that “all have thought (*phronēsis*) and a share of understanding (*aisa noēmatos*)” [DK 31 B 110 (= 10.51)]. In commenting on this line Sextus includes in the “all,” not only animals (*zōa*) but also plants (*phyta*) [Sext. *Adv. Math.* 8.286/DK 31 B 110 (= 10.60)].

<sup>63</sup> This book originated from the necessity to understand the Presocratics' positions on animals to which Aristotle responded in his study of living beings and life. I undertake a study of Aristotle in a parallel book-length manuscript titled *The Logos of Life Itself: Aristotle and the Animals*.

<sup>64</sup> See, for instance, Osborne (1987, 1-13), who challenges the validity of the traditional approach to the Presocratics because it extrapolates fragments and testimonies from their embedded texts without any consideration for the context of the quotation.

opment of the cosmos, down to the formation of animals and plants. Now, Aristotle may well have had his own bias in this homogeneous reception of the Presocratics.<sup>65</sup> For instance, he adopts his doctrine of the causes to comprehend their project,<sup>66</sup> and ends his interpretive trajectory with the formation of plants and animals, which in fact constitutes the focus of his own inquiry in the biological treatises.<sup>67</sup> Their projects included topics that he leaves out. For instance, Aristotle omits the religious, eschatological implications of Empedocles' study of nature or Democritus' considerations of how animals' bodies related to their lives in terms of food provisions and interspecies relations. He also omits to mention the technical, social and political growth of humans with which (some of) the Presocratics engaged, although we may well trace a permanence of their thought in this respect in Aristotle's notorious definition of man as a political animal (*politikon zōon*) and in his notion of the naturalness of the *polis*.<sup>68</sup> This last point, along with the treatment of desire in the ethics, shows Aristotle's systematization of the topics dealt by the Presocratics under the umbrella of *physis* into a regimented set of related disciplines. Further, Aristotle also neglects the so-called Monists to focus on the so-called Pluralists,<sup>69</sup> most likely because he was a Pluralist himself.<sup>70</sup> But in delineating among the Presocratics this common path—from the basic stuff to the diverse forms of life that belong to the whole, as he calls it—Aristotle still offers us a legitimate view whose implications are relevant for our understanding of his predecessors' thought about animals and their lives, humans and plants included, and certainly one that shaped Aristotle's own discussion. Indeed, by following Aristotle's remarks, this study succeeds in

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<sup>65</sup> Since Cherniss (1935), who offered a negative assessment of Aristotle's account of the Presocratics, scholarship has been divided between skepticism (Kingsley 1995, 384-9; Most 1999, 323-33; Laks 2006, 55-56) and more neutral evaluations of Aristotle's history of earlier philosophy (Collobert 2002, 281-95; Frede 2004, 99-44, Leszl 2006, 550-80). Here I align with Baltussen (2000, 28-9) and take Aristotle's historical overview in terms of reception and as the theoretical basis against which he constructs his discourse on animals. Leszl (2006, 370) remarks that the label *physikoi* for the Presocratics was not contemporary to them, but belonged to the Peripatetic classification (cf. Wright 1981, 85-6).

<sup>66</sup> In this respect, see Lennox (2001, 131 and 126), who points out that the appeal to the notion of phenomena and causes is distinctively Aristotelian. Cf. Inwood 2001, 29 for the biased reading of Empedocles.

<sup>67</sup> In fact, arguably in opposition to the Presocratics, Aristotle strives to distinguish plants from animals and in order to assess an ontological difference between them, he intersperses observations on plants in his treatises on animals (see p. 70, n. 1). Yet he devotes to plants a separate study, which has not come down to us. Mentions of this treatise can be found in *History of Animals* (5.539a21) and *Generations of Animals* (1.716a1 and 731a 29-30).

<sup>68</sup> Aristot. *Pol.* 1.1252a24-1253a40.

<sup>69</sup> See *Physics* 1.184b15-23, where in discussing the principles (*arkhai*) of nature—that is “the ultimate constituents of existing things”—Aristotle distinguishes among his predecessors between those that posed the principles into one and those that posed them into many, and as examples of the choices of the first he mentions air and water.

<sup>70</sup> See *Parts of Animals* 2.646a14-24, where he discusses the three-layered structure that gives rise to a given living being and encompasses in turn a composition of elements, body parts and the living body itself.

giving a cohesive and consistent reading of the extant sources— despite their fragmentary status, erratic transmission and intrinsic differences—and even provides new angles of consideration and details. Besides, this discussion of the evidence will also eventually shed light on the development of Aristotle’s own position with regard to the study of animals. For, while Aristotle inherited from Plato the appreciation of reason as the hallmark of man, he considered animals, humans included, in terms of their bodies and capacity to live, thereby voicing a position that made him closer to the early Greek philosophers, students of nature.<sup>71</sup>

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This book is composed of six chapters. They are thematically conceived so as to break the Presocratics’ discourse on animals down into complementary facets that illuminate the relation of living beings to the cosmos and to one another and that reveal a profound integrated vision, based on an interconnectedness stemming from living beings’ original interrelatedness and manifesting itself at multiple levels (from constitutional and sensorial to environmental<sup>72</sup> and even, as it were, “cosmic”).<sup>73</sup> Chapter 1 delineates a common trajectory in the Presocratics’ inquiry of nature. It shows how animals (*zōa*), humans included, were the products of the same phenomena that gave rise to the cosmos and how animals themselves helped establish it via the emergence of distinct habitats. In discussing the constitution of animal bodies, it underscores the Presocratics’ attention to bodily shapes and functions, highlighting the philosophical role that analogies played in the accounts of living beings. Chapter 2 continues the discussion of animal formation, pinpointing in chance (*tykhē*, as implicitly opposed to *tekhnē*) the overarching factor determining the Presocratics’ view on the constitution of living beings, both at the time of their origin and thereafter. It pursues the consequences of such a view for an understanding of animals’ differentiation into multiple forms of life and argues for an overall human/animal conti-

<sup>71</sup> In *Parts of Animals* 1.641a18–641b10 Aristotle asks whether it is pertinent to include a discussion of the soul in the study of animals. He considers the nutritive, sensitive and locomotive parts important, but implicitly excludes the rational one as irrelevant to the *physis* (nature) of a living being.

<sup>72</sup> At an epiphenomenal level, so to speak, “interconnectedness” is manifested in the use of analogies as tools that reveal an aesthetic and functional connection among living beings. At an ontological level, interconnectedness is intrinsic to the fact that living beings possess the same mechanism of sensation and thought as well as the same soul, which in different doctrines appears to be the *arkhē*. The identification of the soul with the *arkhē* leads to another level of interconnection between the living being, on the one hand, and its immediate environment and the cosmos, on the other. Conceived of in this way, interconnectedness will be relevant to the discussion of several chapters (1, 3, 4, and 5; see below).

<sup>73</sup> By cosmic I am here referring to the fact that the living being was considered a microcosm. Such a consideration shows a connectedness between living beings and the world that is based on their sharing, on (respectively) a small and large scale, the same systemic organization (see chapter 1).

nunity. Chance, however, does not exclude the rational: as this chapter shows, in their effort to explain the perpetuation of life, the Presocratics find a key to understanding sexual reproduction and, according to the testimonies, even manipulating it. Chapter 3 moves on to Presocratic theories of how animals sensed, and interacted with, the world. It focuses on the physiological nature of sensation and thought as well as on their overlapping. Chapter 4 is dedicated to plants. On the basis of the extant evidence and by means of a circumstantial argument, it sheds light on the status of plants as animals (*zōa*) further pursuing the continuity among all forms of life which characterizes the Presocratics' inquiry into nature. Part of this chapter was published in *Arion* in winter 2016 within an interdisciplinary study that shows the influence of Presocratic philosophy, and particularly Empedocles, on the conception of plant metamorphosis in Ovid's *Metamorphoses*. Chapter 5 discusses Presocratic theories about the soul and complements chapter 3 on thought and sensation. This division of chapters allows a reconstruction of the development of the notion of the soul from Homer to the early Greek philosophers. This chapter focuses on Heraclitus, Diogenes of Apollonia, and Democritus. It investigates the physiological role of the soul in relation to the *arkhē* of the cosmos (water, air, fire, etc.) and concludes by discussing Pythagoras' theory of the soul's immortality and transmigration, along with its consequences for an understanding of animal life. Chapter 6 analyzes the conception of animals in the cosmology of Plato's *Timaeus*, which I take as a crucial response to the Presocratics' position on living beings and life in the natural world and emblematic of the radical shift established by Plato. With the introduction of the tripartite soul—appetitive, spirited, rational—and concurrently, the assignment of its parts to discrete areas of the body, and the exclusion of nonhuman animals from the rational soul, Plato dramatically departs from the notion of a unity embracing all living beings, voiced by the Presocratics discussed in this book, and radically elevates man, body and soul, to the height of god.

Based on an extensive reading of the ancient evidence, this volume comprises a collection of all the sources that have been discussed or referred to in the course of the chapters. After a section titled "General Remarks," this collection presents the authors in chronological order and organizes the evidence pertaining to each author thematically. Structured in this way, it accounts for the different, interrelated aspects that constituted the Presocratics' reflection on living beings and life within their cosmological perspective and extends to encompass the radical rupture between man and the other species (including the "female") established by Plato's *Timaeus*.

## Chapter 1

# A Presocratic Trajectory: From the Origin of the World to Animals and Plants

Before Aristotle, the study of animals belonged to the history of the cosmos, which the Presocratics traced from its beginning to the present as they conducted a large-scale inquiry into nature (*physis*).<sup>1</sup> As Naddaf has argued, for the Presocratics *physis* was a polyvalent notion that covered all stages in the development of the universe, from its absolute beginning (*arkhē*) to its final result.<sup>2</sup>

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<sup>1</sup> Plat. *Phaed.* 96a8 (*peri physeōs hystoria*); X. *Mem.* 1.1.14; cf. Leszl 2006, 366-9. Aristotle calls his predecessors who engaged in the study of nature *physiologoi* (e.g., *Met.* 1.990a3; *PA* 1.640a7), *physikoi* (e.g., *Phys.* 1.184b17), and *hoi philosophēsantes peri physeōs* [e.g., *PA* 1.640b5-6 (= 0.1)]. On *Peri physeōs* as the title that the tradition has assigned to the works of a number of Presocratics (Anaximander, Anaximenes, Alcmaeon, Xenophanes, Zenon, Melissus, Empedocles, Anaxagoras, Diogenes of Apollonia, Philolaus, and Gorgias), and on its authenticity and the topics discussed in such “treatises,” see Rossetti 2010 (vol. II.815-18) and Laks, 2006, 10; for a view that stresses, instead, the progressive formation of the notion of *physis* as a collective noun encompassing all things that make up the world, see Macé 2012, 47-84 (cf. Patzer 1993) and introduction, p. 12, n. 15.

<sup>2</sup> Naddaf 2005, 64. Laks identifies two fundamental features of the Presocratics’ inquiry into nature: the reflection on the origins and its all-encompassing scale. But he also claims that the label of *physiologoi* does not exhaust their identity and the scope of their inquisitive interest (2006, 7-21). There is a question as to how far the Presocratics’ cosmogonies extended, whether, for instance they included material culture, the creation of cities and political organizations as developments of *physis* (in which case the label of *physiologoi* is still accurate). Naddaf thinks that the Presocratics’ cosmogonies branched into a “politogony” (2005; on this position, see Mansfeld, 1997, 754-8), but the first sound evidence testifying to an inclusion of human society and material culture in Presocratic thought pertains, in fact, to Archelaus and Democritus. Further, Kahn emphasizes that Anaxagoras, Archelaus’ teacher, also dealt with the development of human society, a feature that denies Archelaus’ originality and may in fact be traced back to Anaximander, although, as the author continues, no sound basis can be provided [see DK 59 B 4a (= 17.03), Kahn 1981, 103]. For a critique of Naddaf and Kahn, see Betegh (2016, 8-10), who stresses that in Anaxagoras the focus is on cosmic forces and not on the reasons for human agency (as it will be in Archelaus), holding that before Archelaus cosmogonies ended in “zoogony and anthropogony.” Yet I believe it is still possible to suppose that some Presocratics (certainly, at least, Anaxagoras) included in their cosmogony a consideration of the development of human society and politics, basing it on the “human animal” itself and not merely cosmic forces. I pointed out earlier (see introduction, p. 18) that for Anaxagoras the higher degree of human intelligence in respect to the other animals had to do with the structure of the human body and the possession of hands [DK 59 A 102 (= 17.31)]. Armed with these tools (the hands), humans were able to develop crafts, build cities and live in political organizations as described in DK 59 B 4a (= 17.03). Further, Diogenes too may have discussed these issues inasmuch as he acknowledges a multiform differentiation among animals not only with respect to their bodily appearance and intelligence, but also with respect to their way of living [*diaita*, DK 54 B 5 (= 20.05)]. When applied to the differences specific to the human animal, the notion of *diaita* may likely encompass dwelling, diet, and social and political organizations.

Before Aristotle there was no work dealing specifically with animals other than perhaps Democritus' *Causes Concerned with Animals*.<sup>3</sup> Aristotle's predecessors—even Plato, with the philosophical myth in *Timaeus*—shared a common interest in exploring the process that brought animals into existence as a step within the history of the universe. This at least, is how Aristotle interprets the previous inquiry on animals as he discusses its context in *Parts of Animals*:

Now the ancients who first began philosophizing about nature were examining the material origin and that sort of cause: what matter is and what sort of thing it is, and how the whole (*to holon*) comes to be from it and what moves it (e.g. whether strife, love, mind, or spontaneity). They also examined what sort of nature the underlying matter has of necessity, e.g. whether the nature of fire is hot, of earth cold, and whether the nature of fire is light, of earth heavy. In fact, even the cosmos they generate in this way. And they speak in a like manner too of the generation of animals and plants [...].<sup>4</sup>

For the early philosophers of nature, the study of animals revolved around the understanding of their origin, which was traced back to the primordial substance and the process it underwent. Crucial for jump-starting this process was a “motive origin,” variously identified as love and strife, mind, or spontaneity, and in each particular system of thought it was the interaction between the “motive origin” and the primordial substance—the “material origin”—that gave rise in successive steps to the present organized universe.<sup>5</sup> Plants, animals, and humans were the protagonists of this history,<sup>6</sup> deriving from variations of the same basic physical mechanism yet adding further layers of completion.

In fact, in the *Parts of Animals* passage cited above Aristotle performs a preliminary screening of previous doctrines and delineates a field of reference that seems restricted to the pluralists among his predecessors. For with the mention of strife (*neikos*) and love (*philia*), mind (*nous*), and spontaneity (*automaton*) as “motive origins” Aristotle has a clear set of Presocratics in mind: Empedocles, Anaxagoras, and perhaps Democritus.<sup>7</sup> And it is noteworthy that these

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<sup>3</sup> Leszl 2007, 33; on Democritus' dissection of animals, see Hp. *Pseud. Ep.* 17 (not listed in the “Sources” section); for a recent assessment of Democritus' contribution to zoology in the context of medical and traditional knowledge, see Perilli 2007, 143-79.

<sup>4</sup> Arist. *PA* 1.640b5-13 (= 0.1). (trans. by J.G. Lennox, with slight modifications)

<sup>5</sup> Cf. Lennox (2001, 136), from whom I adopt the expressions “material origin” and “motive origin.” On the place of cosmology in early Greek philosophy, see Long 1999, 5.

<sup>6</sup> Naddaf 2005, 28-35.

<sup>7</sup> Balme 1992, 87. Lennox (2001, 136) questions the reference to Democritus in *Parts of Animals* on the basis that neither later in *Parts of Animals* (1.641b15-23) nor in *Physics* (*Phys.* 2.196a25-196b5) does Aristotle mention Democritus when discussing spontaneity (*automaton*). In fact, this could still be another allusion to Empedocles if we consider *Physics* 2.198b27, where Aristotle brings up chance (*automaton*) as the factor responsible, in Empedocles' zoogony, for the successful constitution of the creatures that were able to survive, in contrast to the less fortunate ones, which were unsuitable to life and perished. See below p. 33. In addition to the philosophers referred to in the above passage from *Parts of Animals*, *On Generation and Corruption* reveals that Aristotle also studied Parmenides, who in positing earth and fire as the “material origin” can also be considered a “pluralist” (*GC* 2.330b13-7). And, indeed, although too scanty to receive a proper treatment in this

Presocratic philosophers were also those who included in their project a study of plants.<sup>8</sup> For them, whether the substantial matter consisted of the four elements, of homeomerics, or of atoms, all living creatures derived from an aggregation of the basic units that composed the primordial substance.<sup>9</sup> It is true that we are better informed for Empedocles than for Anaxagoras and Democritus, but the sparse and distinct testimonies we have for the pluralists still help depict a common scenario for the rise of living beings in the history of the cosmos. On the other hand, we may well assume that in conceiving only one principle (*arkhē*) for the cosmos the monists too (Thales, Anaximander, Anaximenes and later Diogenes of Apollonia) considered all living beings as deriving from the same original constituent, this time by a process of qualitative change rather than aggregation. At least this is what Aristotle let us understand in *Physics* 1 where he divides the earlier students of nature into two categories on the basis of whether they placed the *arkhē* in a single “ingredient” or more.<sup>10</sup>

All creatures shared a common origin and emerged from the earth, or earth and moisture;<sup>11</sup> humans were lumped in with the other animals, as the relatively widespread use of the expression “humans and the other animals” (*hoi anthrōpoi kai ta alla zōa*) seems to indicate.<sup>12</sup> Whether their rise was synchronous with

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chapter and obscured by his doctrine of being, Parmenides’ fragments and testimonies reveal a line of inquiry that addressed the emergence of life within a cosmological perspective, and that discussed the same issues as the “later” pluralists did, such as the birth of animals from the earth and the individuation of habitable zones to embryology, and the coincidence of life with reason—to mention a few.

<sup>8</sup> Plants may have been included in Anaximander’s cosmology too inasmuch as he uses the image of “bark” (*phloios*) around a tree (*dendron*) to account for the origin of the world [DK 12 A 10 (= 03.01)] as well as that of living beings [DK 12 A 30 (= 03.03)]. Further, if we follow the trend in Presocratic thought (see chapter 4) of considering plants living beings (*zōa*), it is legitimate to assume that plants may have featured also in Parmenides who is reported to have said that no living being is deprived of *logos* [DK 28 A 45 (= 09.22), see introduction p. 22].

<sup>9</sup> Cf. *Physics* (2.193a21-8), where Aristotle traces a first distinction in his predecessors’ conception of the primary substance. Some placed it in one substance, others in multiple substances, but either way they considered it eternal, while everything else that derived from the primary substance “passed into existence and out of it eternally.”

<sup>10</sup> See n. above.

<sup>11</sup> Guthrie 1965, 2: 210, 315 n. 2, and 472 n. 2 [according to the doxography, the idea that life originated from moistened earth was already in Anaximander, DK 12 A 11 (= 03.02) and DK 12 A 30 (= 03.03, 03.04; cf. 03.05); see introduction pp. 15-7; for Xenophanes, see DK 21 B33 and DK 21 B 29 (= 06.02, 06.03); for Archelaus, a contemporary of Anaxagoras, see DK 60 A 1 (= 18.01); for Democritus, see DK 68 B 5 (= 21.10) and DK 68 B 5.2 (= 21.11); cf. Guthrie 1957, 31-42; Kahn 1960, 109-113]. Empedocles presents a more complex situation: he envisions, if we follow Aëtius, four different zoogonies [DK 31 A 72/Aët. 5.19.5 (= 10.12)]. Of them only the third springs directly from the earth [DK 31 B 62 (= 10.19)], that of the whole-natured beings (*holophyeis*) while we can assume that the other three derive from the “running together” of the elements under the influence of Love and Strife. Yet earth still plays a fundamental role as one of the components of living beings, especially so in the formation of the terrestrial animals, inasmuch as they are *geoidē*.

<sup>12</sup> See, for instance, Anaxagoras [DK 59 B 4a (= 17.03)], Archelaus [DK 60 A 4 (= 18.02)], Diogenes [DK 64 B4 (= 20.04)]; cf. Anaximander DK 12 A 10, 11 (= 03.01, 03.02) and 30 (= 03.04, 03.05) where humans are said to develop from another form of life. Further, Empedocles uses a similar notion when discussing “the running together” of the elements and the subsequent emer-

that of the other animals or derived from an already established form of life, humans still belonged to the animal club. Significantly, because it was framed by a cosmological perspective, the inquiry of the Presocratics did not revolve around the question of what makes humans human.<sup>13</sup> The base of their inquiry was large, and the focus rather unbiased, and the extant evidence suggests that they aimed to understand the source of life and its multiple forms in a system of integrated differences. For instance, there was little distinction between anthropogony and zoogony. As Campbell remarks, zoogony was “simply a function of cosmogony, and anthropogony an aspect of zoogony.”<sup>14</sup> Accordingly, no privileged event set humans apart from the other living beings of the world, such as happened in the mythical accounts of Protagoras and Timaeus in Plato’s homonymous treatises. These two accounts unleashed a discourse that aimed to establish human distinction and superiority: in *Protagoras*, humans emerged above the other animals as a distinct species by divine intervention and the theft of fire and the gift of politics;<sup>15</sup> in *Timaeus*, they were the first species created by the gods, and animals then emerged as natural ‘mutations’ resulting from the embodiments of humans’ fallen souls.<sup>16</sup> And even if, among the Presocratics, Empedocles did conceive a distinct zoogony producing just humans, that of the whole-natured beings,<sup>17</sup> in this case too humans’ unique emergence *vis-à-vis* that of other animals should be considered in terms of the cycle of double genesis and destruction (*doiē genesis/apoleipsis*) governing all mortal creatures (*thnēta*) rather than as a statement about human exclusivity.<sup>18</sup> Overall, the Presocratics wove an inclusive discourse that accounted for a diversity among living beings based on bodily forms and “physiology”— and in turn habitats— and tempered it by means of its inquisitive strategies: on the one hand, the systematic search for a common origin and the processes underlying the formation of all living beings, and on the other, the identification of formal and functional analogies connecting them all.<sup>19</sup>

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gence of human and animal life [with the expression *hoi anthropoi kai allōn ethnea thērōn*, see DK 31 B 26 (= 10.10)].

<sup>13</sup> The ancient Greeks’ efforts to explain what defines humans *vis-à-vis* the other animals, along with the shifting boundaries of that definition, have been in the spotlight of recent studies. See, for instance, Osborne 2007, 24-54, and Lloyd 2012, 8-30 (and introduction, pp. 11-2). Yet, in focusing on the definition of the human (Lloyd), and in pursuing the aprioristic subjectivity of the demarcation between “us” and them (the animals) or the self-referentiality of a presumed continuity (Osborne), these studies support an anthropocentric approach, which the present project intends to downplay.

<sup>14</sup> Campbell 2000, 159. In this respect, it is significant that in his review of the Presocratics’ inquisitive project Aristotle mentions animals (*zōa*) and plants (*phyta*), but omits humans (*anthrōpoi*), thereby including them in the wider category of living beings (*zōa*) [PA 1.640b12-3 (= 0.1)].

<sup>15</sup> Plat. *Prot.* 321e-322d; cf. Osborne 2007, 30-4.

<sup>16</sup> See the discussion of Plato’s *Timaeus* in chapter 6.

<sup>17</sup> For a discussion of this position, see below pp. 36-7.

<sup>18</sup> P. Strasb. vv. 232-35 ed. Primavesi 2008 (= DK 31 B 17.1-3) (= 10.05).

<sup>19</sup> In fact, their discourse not only diverged from Plato’s but also contrasted with that embedded in the practice of animal sacrifice, supported by the religion of the *polis* and revealing in ancient

Indeed, the delineation of a common scenario and the construction of an inclusive discourse stemmed in part from the careful attention given to the shape and color of animal bodies, to their discrete parts, and to the apparent aesthetic and structural unity connecting the different forms of life on this planet. And the identification of this formal connection was yet another manifestation, and proof, of the organized nature of the world. The Presocratics' gaze then moved from the external constitution of animals to the internal, pausing on the organic tissues and tracing the process of animal reproduction. They explained in this way the transition from the beginning of life to its perpetuation. In the next stage of this inquiry they looked at the psychological and mental activities of all animal, human and plant life (*ta zōa*). For trees too were considered *zōa*, regarded as animals' fellow creatures.

At the same time, the emergence of animals in the plurality of all their different forms led to the differentiation of the environment itself, which was divided in turn into distinct habitats suitable to each kind. It was only after the appearance of life that the earth tilted on its axis, as we will soon see in the context of Anaxagoras and Diogenes. As the growth of the cosmos was thus interlaced with the origin of animals in a nonlinear path, the appearance of birds, the terrestrial creatures, and fish was not just the last phenomenon to occur; rather, animals' act of existence and the place of their manifestation constituted in themselves defining elements of the universe. This is, in a nutshell, the trajectory of the Presocratic studies, which the next sections will discuss in depth on the basis of the extant fragments and testimonies.

### 1.1. Bodies in an Interconnected Living World

Poet and doctor, mystic and philosopher, a charismatic citizen of the *polis* of Akragas, Empedocles represents a complex figure whose different facets can be related to a knowledge of nature that allowed him to understand, and ultimately unmask, the phenomena of life and death.<sup>20</sup> According to his doctrine, the world in all its aspects, living beings included, is composed of the four elements: earth, water, air and fire. Empedocles calls them roots (*rhizōmata*) so as to stress their originative power.<sup>21</sup> "Of nothing there is growth (*physis*), among all mortal things (*thnēta*) nor is there an ending coming from baleful death (*thanatos*), but only mixture (*mixis*) and exchange (*diallaxis*) of things mixed

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Greek thought the presence of a radical, unbridgeable difference between humans and animals. In the Greek communities, as Vernant argued a few decades ago, the performance of blood sacrifice at once brought humans closer to the gods while further removing them from the animals they felt entitled to kill [Vernant 1980, 105-6 (first ed. 1972); cf. Vidal-Naquet 1975, 129-142].

<sup>20</sup> In Empedocles' thought mortality constitutes, I believe, the interface between the domains of physics and religion, which for so long scholarship has kept artificially divided, thereby splitting the philosopher's work into two poems.

<sup>21</sup> DK 31 B 6 (= 10.04); see Montevecchi 2010, 59.

exist, and ‘birth’ is a name given by mortal humans.<sup>22</sup> The mixture of these four roots gives rise to the formation and growth of all living beings—man, wild beasts, bushes or birds<sup>23</sup>— while their interchange decrees what ordinary men call death.<sup>24</sup> In several fragments, Empedocles refers to the totality of living beings as mortal (*thnēta*)<sup>25</sup> with the aim of reassessing, and revealing in physical terms, the phenomenon of their lives, conventionally defined by a beginning and an end. In fact, the birth and death of mortal creatures are not absolute inasmuch as the physical elements that compose them are eternal and reassemble in new compositions, thereby concurring to form new bodies, whether animal or not. In this way, all living beings, from humans to bushes, are involved in a constant process of metempsychosis; Empedocles focuses on the material compositions of the bodies and their epiphenomenal quality rather than on the embodiment of a dianoetic principle like the soul.<sup>26</sup> Indeed, for the philosopher of *physis* looking at the creatures of his world, all living beings share a common nature, regardless of their individuality and animal specificity, because they are composed from the same roots. They undergo the same basic biological phenomena while participating in a physical reality that transcends them and ultimately tempers their empirical differences.

The aggregation and disaggregation of the four roots under the influence of Love and Strife is also key to understanding the history of the cosmos along with the original emergence and ensuing development of life. Empedocles mentions a double birth (*doiē genesis*) and a double waning (*doiē apoleipsis*) of mortal things (*thnēta*) relating them to two distinct phases of the cosmos: one under the rule of Love, the other under that of Strife. Ultimately, we hear, the

<sup>22</sup> DK 31 B 8 (= 10.02); see also DK 31 B 15 (= 10.01).

<sup>23</sup> DK 31 B 9 (= 10.03). The elemental source of the multiple forms of life, gods included, is mentioned also in the Strasbourg papyrus [vv. 269-272 ed. Primavesi 2008] [not in “Sources”, but the series of living beings it recounts is the same as in DK 31 B 21 (= 10.06)], while another set of lines (vv. 294-8 ed. Primavesi 2008) presents Empedocles’ exhortation to see “the coming together and the unfolding of generation” in the existing various forms of life, from wild beasts to flowers and grape vines (= 10.07).

<sup>24</sup> On the influence of Parmenides in Empedocles’ philosophy of nature and the presence of two ontologies, see Inwood 2001, 24-6.

<sup>25</sup> As Trépanier remarks in reference to line 3 of B 17 (= P. Strasb. v. 234) (= 10.05), *thnēta* (mortal things) is an umbrella term that encompasses all mortal beings (2003, 23-5); see also Bignone 1916, 551.

<sup>26</sup> For this point see Gallavotti 1975, XIII-XIV. It is true that Empedocles mentions the exiled *daimones*, who break away from the “blessed ones” and for ten thousand years “grow to be all sorts of forms of mortal things through time interchanging the hard paths of life” [DK 31 B 115 (= 10.61)]. Yet this phenomenon, whose beginning signals the end of the daimonic cycle, has to be distinguished from the emergence and unfolding of life in the successive cosmic cycle and its phases. In other words, the exiled daimons may well be “incarnate” in different forms of life and therefore hold an ontological specificity, regardless of their different embodiments, but their fate merely intersects the universal process of mixture and interchange in which the four roots of the world are involved. On daimons’ “individuality,” see Gain 2007, 146-7. Empedocles himself claims to belong to the daimons, as he remembers having been “a boy and a girl and a bush and a bird and a fish” [DK 31 B 117 (= 10.62)]; cf. Sedley 2007, 31-2, 50-1.

rule of Love becomes absolute, turning the cosmos into a Sphere that embraces all the four roots in a state of total union and rest, while relegating Strife to the margins. In turn, eventually, Strife takes over, leading the four roots to radical separation until Love begins again to exercise its unifying effect; and this alternation of the two forces with their respective cosmic phases goes on *ad infinitum*. Meanwhile, between the stages of Love and Strife's absolute dominions, decreeing respectively the total union and separation of the elements, mortal things are born and disappear, twice.<sup>27</sup>

As to what type of mortal things the two zoogonies produce, Aëtius' well-known overview presents a succession of four discontinuous generations, whose specificity is confirmed by Empedocles' extant fragments. Each generation of plants and animals betrays a consistent focus on creatures' bodies, discussed in terms of constitution and appearance of parts (or their lack), and how ultimately complementary parts of the body ultimately join and grow together giving rise to self-sustainable beings.<sup>28</sup>

Empedocles: the first generations of animals and plants were not at all born as complete entities (*holoklēroi*), but were disconnected, with parts that had not grown together; the second ones, when the parts had grown together, had the appearance of phantasms (*eidōlophaneis*); the third ones were the generations of the whole-natured (*holophyeis*); the fourth ones no longer came from similar things, like earth and water, but henceforth from each other, in some cases because of the thickening of their food, in others too because of the women's beauty caused an excitation of the spermatogenic movement.<sup>29</sup>

The first zoogony is defined negatively, in opposition to an organic model based on completeness and intergrowth.<sup>30</sup> It consists, indeed, of bare parts sprung from the earth and wandering alone. "As many heads without neck sprouted up and arms wandered naked, bereft of shoulders, and eyes roamed

<sup>27</sup> P. Strasb. vv. 232-257/LM EMP. D73 (= 10.05); cf. also DK 31 B 26 (= 10.10) and Trépanier's discussion (2003, 22-8). In fact, fragment B 17 (= 10.05) has been at the center of a vexed, perennial question as to whether Empedocles envisioned one zoogony or two, one under Love and the other under Strife. This last view has been canonical for many decades (Bignone 1916, 545-85, Guthrie 1969, 200-11) and was eventually challenged by a number of scholars who claimed, instead, only one continuous zoogony under the rule of Love (Hölscher 1965, 7-33; Bollack 1965, 95-124; Solmsen 1965, 109-48; Long 1974, 397-425; Kirk, Raven, and Schofield 1983, 299-305, and recently Santaniello 2004, 23-81). The discovery of the Strasbourg papyrus, with new fragments of Empedocles has confirmed the two-zoogonies interpretation and has been supported recently by a number of scholars (Martin and Primavera 1999, 54-7, 80-2, 95-7; Sedley 2007, 33-5, 40-1). For a comprehensive survey of the bibliography on this question see Montevicchi 2010, 68, n. 76.

<sup>28</sup> In this respect, the myth in Plato's *Protagoras* provides an interesting parallel to Empedocles' zoogonies. For in distributing different and complementary parts, and features, to animals Epimetheus created different species, thereby playing the same role as chance in the Presocratic philosophical accounts (Plat. *Prot.* 320c-328d).

<sup>29</sup> Aët. 5.19.5/DK 31 A 72 (= 10.12). For *holophyeis*, see note 6 in "Sources."

<sup>30</sup> By using the adjective *holoklēreis* (entire) as to describe what the first zoogony is not, Empedocles reveals a notion of the organic body as divided into basic units that belong to more complex formal configurations. Thus, in DK 31 B 57 (= 10.13), cited below, he mentions heads without necks and eyes without foreheads.

alone, impoverished of foreheads,<sup>31</sup> writes Empedocles, turning distinct parts of the body into self-enclosed, original living beings. In the next stage these discrete animal parts merge by chance to form hybrid, experimental bodies quite unlike the harmonious creatures of the present. Members of this zoogony include “oxen with a human head” (*ta bougenē androprōira*), living beings with oxen heads implanted on human bodies (*androphyē boukrana*), and cattle with countless hands; others have two faces and two breasts (*amphiprosōpa kai amphisterna*), and are composed of both female and male parts.<sup>32</sup> Among these, according to Aristotle, only those that are apt to live survive, while the rest perish<sup>33</sup> and the key to this survival is a fit combination of the parts forming animal bodies.<sup>34</sup> At any rate, whereas this zoogony is defined by surplus and mismatching, and excess of forms, the next one—that of the *oulophyeis*, the whole-natured ones—is characterized by shapelessness and wholeness combined. “First whole-natured outlines (*oulophyeis typoi*) sprang up from the earth possessing a share of both, of water as of heat. These fire sent upward, wishing to reach what was similar to it; as yet they displayed neither the lovely framework of limbs (*eraton demas meleōn*), nor the voice and the organ that is native to men.”<sup>35</sup> From the first animals, consisting of completely disconnected parts, not growing together (*asymphyenta*),<sup>36</sup> through the exuberant hybrids to these shapeless, whole-natured creatures (*oulophyeis typoi*), the succession of Empedocles’ zoogonies marks a progression toward bodily shape and completion, which is finally achieved in the forms (*eidē*) and colors (*khroia*) of the contemporary mortal beings by means of the harmonization of Aphrodite.<sup>37</sup> The key to the success of

<sup>31</sup> DK 31 B 57 (= 10.13); Cf. P. Strasb. v. 302/cf. DK 31 B 20 line 1 (= 10.08), where we also hear about wanderings limbs, a process that involves the parts of all living beings, from bushes and fish to beasts and birds. Here, though, unlike in Aëtius’ testimony quoted above, the context is explicitly that of Strife’s rule. See below.

<sup>32</sup> See DK 31 B 60 (= 10.14) and DK 31 B 61 (= 10.15); cf. Guthrie 1965, 2: 203. See also *Phys.* 2.198b31-2, where Aristotle mentions Empedocles’ “oxen with human heads” in the context of a larger discussion of whether fortune (*tykhē*) interferes with nature; ultimately he denies this possibility.

<sup>33</sup> Arist. *Phys.* 2.198b27.

<sup>34</sup> Simplicius clarifies the phenomenon of survival, explaining that in these newly formed bodies all parts fulfilled mutual needs, “the teeth cutting and chewing the food, the stomach digesting it and the liver turning it into blood” [*In Phys.* p. 371.33-372.9 (= 10.16)]. Ultimately, the members of the second zoogony survive by a process of symbiosis; see Longo (1999, 143), for whom, however, this process affects the other zoogonies as well.

<sup>35</sup> DK 31 B 62, lines 4-9 (= 10.19).

<sup>36</sup> DK 31 A 72 (= 10.12).

<sup>37</sup> DK 31 B 71 (= 10.11). One should notice, in fact, that all first three zoogonies are, somewhat, characterized by formal lack. Indeed, the first zoogony is not only characterized by the lack of wholeness—its creatures are not *holoklēroi*—but the living parts themselves are defined by negation. The heads are without necks (*anaukhenes*), the arms naked, without shoulders (*eunides omōn*), and the eyes alone, impoverished of foreheads (*metōpa*), where the etymology for foreheads graphically presents this part of the body as “the space between the eyes” [DK 31 B 57 (= 10.13)]. On the other hand, creatures of second zoogony have shadowy limbs [DK 31 B 61 (= 10.15), see below], while those of the third ones lack the “lovely frame” of limbs [DK 31 B 62 (= 10.19), line 7]. On the

the fourth, and actual,<sup>38</sup> zoogony—the only one that, according to Aëtius, is able to eat “thick nourishment” and procreate sexually—is the harmonious “growing together” (*symphyein*) of the animals’ bodily parts.<sup>39</sup>

In his testimony, Aëtius does not synchronize the different generations of plants and animals with the cosmic phases to which they belong, whether under the increasing rule of Love or Strife. Scholars have filled this gap and assessed that the first two—the bare living parts and the mismatched “creatures of phantasy”—develop under Love,<sup>40</sup> the remaining ones—the “whole-natured” and those sexually differentiated—under Strife.<sup>41</sup> The consideration of the cosmic phase in which a given generation occurs is crucial to understanding the physical nature and specificity of the living beings that belong to it. Indeed, Love and Strife, conceived as synergetic powers, have concrete, tangible effects on the creatures’ bodies, on their composition and articulation.<sup>42</sup> Strife, whose creative role has been forcefully denied,<sup>43</sup> is in fact responsible for the formal, and consequently functional, articulation of animals’ bodies, for their sharp definition; the harmonization of the actual living beings by Love is possible only because of the concomitant and overpowering divisive effect of Strife.<sup>44</sup> In other words, Love works successfully under outside pressure. Thus, it is significant that in describing the bodies of living beings at a stage when the rule of Love had much advanced and the power of Strife receded, Empedocles defines their limbs as “shadowy” (*skiera gyia*),<sup>45</sup> that is, lacking definition. The progressively unifying power of Love in connection with the estrangement of Strife blurs bodies’ con-

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contrast between the living parts of the first zoogony and the whole-natured creatures of the fourth, see Bignone 1916, 566.

<sup>38</sup> In *On Generation and Corruption* Aristotle tells us that we live in the time of Strife (*epi tou Neikous*) (2.334a5).

<sup>39</sup> In fact, the harmonious bodily constitution that for Empedocles characterizes the last zoogony is manifested, in Aëtius’ testimony, by women’s shapeliness (*eumorphia*), as the factor triggering sexual desire and the process of sexual reproduction; see below p. 35; cf. also DK 31 B 64/ Plut. *Quaest. Nat.* 917c (= 10.21), a fragment cited by Plutarch in relation to sexual love, which likely presents man’s desire for intercourse as deriving from sight.

<sup>40</sup> On the basis of DK 31 B 61 (= 10.15) and comments by Aristotle and Simplicius (see p. 33, notes 33 and 34 above), Guthrie argues that the survivors of the second generation, the *eidolophaneis*, constitute a third stage in the period of increasing Love, omitted by Aëtius in his list of four generations (1965, 2: 203-6).

<sup>41</sup> As mentioned earlier, attribution of the zoogonies to distinct cosmic phases belongs to Bignone 1916, 570-85; Guthrie 1965, 2: 200-211; Martin and Primavesi 1999, 54-7, 80-2, 95-7; and Sedley 2007, 33-5, 40-1.

<sup>42</sup> On the “synergy” of Love and Strife in each period during which one of the two holds increasing rule, see Bignone 1916, 584; Guthrie 1965, 2: 163-83; Wright 1981, 64, 67, 99; Kingsley 2002, 385-90; Montevecchi 2010, 83-7.

<sup>43</sup> See p. 32, n. 27 above.

<sup>44</sup> On the creative role of Strife see also Wilcox (2001, 121) and Trépanier (2003, especially 18-28). Further, Trépanier considers even the near perfection of blood in living beings as indicative of the presence of Strife, and concludes that “Strife must always be thought to be present within mortal bodies” (2003, 32-3).

<sup>45</sup> DK 31 B 61 (= 10.15).

tours and induces an excess and extravaganza of parts. Conversely, when Strife starts taking over and breaks the unity of the Sphere, the first zoogony it produces is still under the influence of Love. It consists in those living masses, who spring up from the earth under the effect of fire and whose shape lacks the “lovely frame of limbs” (*eraton demas meleōn*).<sup>46</sup> This expression foreshadows the final zoogony, when sexual differentiation arises under the increased power of Strife and the “beautiful shape” (*eumorphia*) of women triggers men’s sexual desire. Trees, on the other hand, stand as “living fossils.” According to Aëtius, they are the first animals (*zōa*)<sup>47</sup> to grow out of the earth in the first stage of Strife’s ascent, before the rise of the sun and the distinction between day and night. As such, they are contemporary of the whole-natured creatures of the third zoogony. For like these creatures, trees maintain a visceral connection with the earth, from which they receive their food. Further, they too combine the masculine and feminine sex,<sup>48</sup> a biological feature that stemmed from the weakness of Strife’s ascending power and, for Empedocles, may have been reflected in the graphic fullness of their shapes, especially when covered by leaves.<sup>49</sup> The fact that trees continue to exist from the time of the first zoogony under the rule of Strife suggests that for other contemporary living beings the transition from third to fourth zoogony may have happened by means of “adaptation” when they gained the ability to eat solid food and procreate sexually. Likewise, it is plausible to envision some sort of continuity between the first and second zo-

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<sup>46</sup> DK 31 B 62 (= 10.19).

<sup>47</sup> On trees as the first living beings to rise up out of the earth, see also Nicolaus of Damascus [*de Plant.* 57, p. 221 ed. Drossaart Lulofs (= 10.18)]. As Guthrie remarks, Aëtius’ use of *zōa* is likely a direct quotation from Empedocles, for whom “with his belief in the kinship of all life, there was no firm distinction” between trees and animals (Guthrie 1965, 2: 209). Interestingly, Empedocles’ view on the primeval nature of trees is echoed in Anaximander for whom, according to the doxography, the first organism were born from mud and surrounded by a thorny bark (*phloios*). Eventually the bark broke and the primeval living beings became “land animals” [DK 12 A 30 (= 03.03)]. For a discussion of the status of plants as animals in Presocratic thought, see chapter 4.

<sup>48</sup> See Nic. Dam. *de Plant.* 1.3, p. 127 Drossaart Lulofs/LM EMP. D250a (= 10.58) and DK 31 B 70/Aët. 5.26.4 (= 10.54). Another biological trait shared by trees and the whole-natured is, in the mention of the *rhizōmata* that compose them, the lack, in each case, of air [cf. DK 31 B 62 (= 10.19)]. According to Bignone, this omission occurs because air is a component of blood and flesh, which the creatures of the third zoogony do not yet have (1916, 581).

<sup>49</sup> This last assertion is an inference from the consistent attention Empedocles devoted to the forms of the living beings of all zoogonies; in fact, no explicit evidence supports it. We know, however, that Empedocles paid particular attention to the biological phenomena of trees and explained in physical terms their fructification; the shedding (*phylloskein*) or, conversely ‘the keeping’ (*paramenein*) of their leaves (in the case of laurel, olive, and palm trees); and the flavor of their juices (*khythoi*) [DK 31 A 70 (= 10.54)]. Interestingly, the doxography preserves for us a couple of adjectives used by Empedocles to describe the ever-greenness of trees and their continuous fructification, respectively *empedophyllon* and *empedokarpa*, which, as Repici remarks, refer to the substantive *pedon*, “that on which the foot steps” or “ground,” and indicate, as in the epic vocabulary, “something solidly planted in the ground” or “solidly installed” and therefore also “long-lasting” and “abiding” [see DK 31 B 77.78 (= 10.55, 10.56); Repici 2000, 74, 281, n. 86]. Yet, it is tempting to read into this temporal “stability” of fruit and leaves an allusion to trees’ “whole” and original physical and formal constitution.

ogony under the rule of Love when the bare parts of the first zoogony assembled into the hybrid bodies of the second, mentioned by Aristotle in *Physics*.<sup>50</sup> Hence, we can reconcile the four zoogonies mentioned in Aëtius and Empedocles' relative fragments with the double birth and double waning of fragment 17.<sup>51</sup>

Recently a new interpretation has been given to the chronology of Empedocles' zoogonies. Sedley has argued for a separate anthropogony in the phase of ruling Strife; he considers most plant and animal species living in the time of Strife as derivative from the previous zoogony under Love. In this way, men and women would have a double origin, the first together with the other animals under Love, the second alone under Strife.<sup>52</sup> This interpretation, however, relies on two complementary assumptions. One takes the living masses (*oulophyeis typoi*) reductively as "a prelude of men and women" to the exclusion of the other living beings, while the other claims a literal continuity of the zoogony under Love. A full discussion of Sedley's interpretation falls outside the scope of this work. Here let a few points addressing the aforementioned assumptions suffice to keep Empedocles among the Presocratics who envisioned a common origin for humans and animals, which lies at the core of Presocratic inquiry into nature and is central to this book. The issue of continuity among zoogonies is crucial to understanding Empedocles' cosmological system, and one has to assess whether he meant it literally or otherwise. Sedley argues for a literal continuity—the animal species Pausanias sees are the same as those that emerged in the previous cosmic phase/s—on the basis of the Strasburg papyrus<sup>53</sup> where Empedocles invites Pausanias to see the "coming-together and unfolding of birth" under Love in the current forms of life. Yet this assertion does not necessarily mean that Pausanias sees the *same* living beings that had been formed under Love; rather he sees the same synergy of Love and Strife. In this respect, Trépanier considers that a zoogony formed under increasing Love still has "explanatory force" in the age of increasing Strife, given that both Love and Strife interact in each zoogony, one unifying, the other dividing, regardless of who is ruling,<sup>54</sup> and, one could add, reaching a balance that is conducive to forming successful living beings. On the other hand, Empedocles is more concerned with the physical continuity of reality resulting, in each cosmic phase, from the combination and separation of the elements than in a continuity of specific living beings, whose forms and identity we in fact see changing from zoogony to zoogony. Even between

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<sup>50</sup> In this case too the transition from first to second zoogony would be enabled by a phenomenon of symbiosis as for the survivors of the second zoogony (see above n. 34, but also the due qualifications on p. 37).

<sup>51</sup> Thus, unlike Sedley's position accounted for below, continuity pertains to the living beings within the individual domain of Love and Strife rather than to the living beings across domains.

<sup>52</sup> 2007, 35-49; Sedley 2005, 334-347.

<sup>53</sup> Ensemble a(ii), lines 25-8 Martin and Primavesi (= lines 295-96 Primavesi) (=10.07).

<sup>54</sup> 2003, 46; cf. for a similar point, see also Gemelli Marciano, who stresses the coexistence of Love (*Philia*) and Strife (*Neikos*) in the cosmic cycles and the ensuing zoogonies. Love binds while Strife releases (2005, 375-6).