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The Epicureans on Free Will

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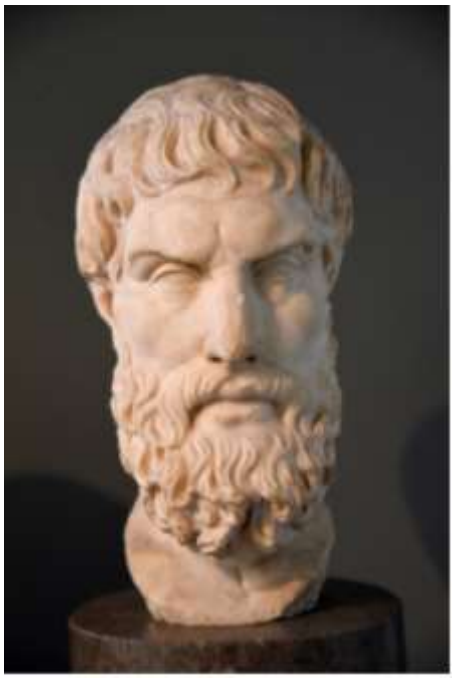

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Cover photography: Epicurus, Roman copy of a lost Greek original of the late 3rd or 2nd century BCE from near the Via Appia, Rome. (The British Museum, London)

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Abstract

Nikolina Kamzola: The Epicureans on Free Will

Human behaviour, according to the atomic theory, should be interpreted in a deterministic manner based on the weight of the atoms and their movements in the void. How is it explained, however, that sometimes humans believe that they are themselves morally responsible for their decisions and actions, and thus they either praise or disapprove those in their everyday life? To explain this fact, Epicurus introduced the term "*παρέγκλισις*". But where does this concept come from? Is there free will? And if so, what do we mean by "free will"? Can it coexist with determinism? In the present work these issues of the physical and moral atomic theory of the Epicurean philosophers are closely discussed.

Introduction

This Master's thesis aims to analyse in detail whether free will, as developed in modern philosophy, was a question to which the Epicurean philosophy attempted to answer. The Epicurean texts give rise to the discussion of free will, with the term "*παρέγκλισις*" or "*clinamen*", which seems to be understood as a deviation from the normal atomic motion and which cannot be adequately explained on the basis of the deterministic description of the physical motion of atoms in the void. This deviation in the physical theory of Epicurus also has moral implications, as it seems to be the cause of the ability of the living beings to think, to desire, to choose and to act as they wish. In other words, it seems to be the natural cause of free will. Where does "*παρέγκλισις*" come from?

In order to answer to this question, the present work is structured as follows: The first chapter summarizes the atomic theory of Democritus, from which Epicurus drew his ontology and which he enriched in order to answer questions that remained unanswered by the theory as it was.[1] In the second and third chapter it is appropriate to make a detailed presentation of the passages which seem to raise the question of free will, as they introduce the term "*παρ' ἡμᾶς*" and the term "*παρέγκλισις*" – "*clinamen*"; in particular, these passages are taken from Epicurus' *Letter to Menoeceus*, *On Nature* and *Vatican sayings*, from Cicero's *On Fate,* as well as from Lucretius' *De Rerum Natura* (henceforth *DRN*), as quoted and translated by A. A. Long and D. N. Sedley.[2] In the fourth chapter, some interpretive approaches by contemporary scholars of the above passages are presented, while reference is made to other texts that present Epicurean philosophy, which could function as parallel texts and thus add some further information for its better understanding.[3] In conclusion, an overview of the accounts of contemporary philosophers is given and a critical evaluation of their positions is attempted.

What is certain, however, is that the natural and moral philosophy of Epicurus - as it was presented by Lucretius - influenced many thinkers in the history of ideas, such as Poggio Bracciolini in the 14th century, Thomas More in the 15th century and Giordano Bruno in the

[1] The texts analysing Democritean atomic theory in the first chapter are taken from G. S. Kirk, J. E. Raven, M. Schofield, *The Presocratic philosophers*; they are based on H. Diels and W. Kranz, *Die Fragmente der Vorsokratiker*, Berlin: Weidmann, 1952.
[2] Long and Sedley 1987, chapter 20.
[3] An appendix is included for a presentation of the original excerpts cited in the work.

16th century.[4] Hence Democritus may be (along with Leucippus) the father of atomic philosophy, but Epicurus developed it by introducing the term "*παρέγκλισις*", with which he tried to answer the question of what we conceive as free will in our daily life and which makes us responsible for our actions and agents who can be praised or blamed.

As some terms will be repeated regularly in the sections of the present work, it would be helpful at this point to briefly present their content.

According to *The Cambridge Dictionary of Philosophy,*[5] "determinism" is "the view that every event or state of affairs is brought about by antecedent events or states of affairs in accordance with universal causal laws that govern the world". That is to say, the future can be predicted with absolute accuracy, if it is determined by the prevailing natural forces. The term "determinism" is also used in a more general way to describe metaphysical theories according to which there is only one possible history of the world. We can distinguish determinism into scientific or causal, theological and logical; in this case, our focus is on the first category (namely, scientific or causal determinism), since the issues that we are analysing are related to the question of whether the physical order occurs by a universal causal law. Determinism is a universal theory that also applies to human actions and choices, which are the inevitable product of a series of previous factors and which could be predicted precisely by an omniscient agent. Thus, the problem arises as to whether determinism and free will can coexist or are mutually exclusive concepts. As far as "fatalism" is concerned, some argue that it is a version of determinism, since it implies that there are forces that determine results regardless of human desires or actions. However, others deny this, because they believe that determinism does not exclude the effectiveness of human desires and actions, which are determined by prior factors, as if there were a causal chain of events; hence they are compatibilists.

The term "free will", again according to *The Cambridge Dictionary of Philosophy*, it is related to "the nature of free agency and its relation to the origins and conditions of responsible behaviour". "Free will" is often presented as the opposite of "determinism", since humans can either act freely as agents having moral responsibility, or their actions are determined by external events and conditions that are beyond their control. The free will problem is also associated to questions about whether moral responsibility requires freedom and what kind, and whether freedom can be reconciled with the prior determinism of characters, thoughts,

[4] Greenblatt 2012, chapter 10.
[5] *The Cambridge Dictionary of Philosophy* (2nd ed.), (1999), Cambridge: Cambridge University Press.

decisions, and actions. Determinism raises questions about whether freedom includes alternatives of action. On the one hand, there is “incompatibilism” showing that determinism excludes freedom; on the other hand, there are philosophers who are not willing to dispense with freedom and, believe that both freedom and responsibility can be compatible with determinism and therefore they support “compatibilism”. Specifically, some compatibilists argue that agents are free to decide whether their decisions are under their control and in line with their desires or conform to their higher values and deeper character. Yet, other compatibilists recognise the need for open alternatives and that choices are free if they relate to certain sets of circumstances.

1. Democritus' atomism. Epicurean addenda to Democritus' theory

Democritus of Abdera (460-370 BC) was a contemporary of the Sophists and Socrates, who elaborated and systematized the atomic theory devised by Leucippus.[6] Several years later, his atomic theory was to be adopted, but also modified and refined by Epicurus.

Cicero, in his *Academica priora II*, reports that Democritus advocated the existence of atoms and void, and it was precisely this metaphysical conception that influenced Epicurus' work (Kirk, J. Raven, Schofield, 2014: 404). Aristotle, in *Metaphysics* A 4, 985 b 4, points out that Democritus believed that the elements that exist are the complete, *ὄν*, which is full and solid, and the void, *μὴ ὄν*, which is empty and sparse. Democritus identified that these two elements are the material causes of things. In his treatise *On Democritus*, according to Simplicius (in *On Heaven* 295, 1), Aristotle discusses Democritus' position that substances are particularly small and imperceptible, even though they have all kinds of forms, shapes and sizes (ibid.: 414-5). In *On Generation and Corruption* A 8, 326 a 9, Aristotle states that Democritus argued that atoms do not have the same weight, but that which is larger is heavier. Theophrastus, in his *On Sense Perception* 61, repeats, like his teacher, that the pre-Socratic philosopher distinguished between the heavy and the light on the basis of size, while he added that among the composite bodies, the lighter is the one that contains the most void. Simplicius (in *On Heaven* 712, 27) claims as well that, according to Democritus, fire is lighter, which is why it moves upwards and is suppressed by bodies that are heavier (ibid.: 419). On the other hand, Aetius (I, 3, 18) states that Democritus defined two qualities of atoms (size and shape), while Epicurus added a third, namely weight (ibid.: 419). Aetius may have reached this conclusion for Democritus, since atoms move in infinity due to their collision, without mentioning their downward motion, which Epicurus added to the atomic theory (ibid.: 421). Moreover, Simplicius (in *On Heaven* 242, 18) indicates that both Democritus and Epicurus asserted that the first principles of beings are infinite in number, indivisible and indestructible, because they are solid, without void within them (ibid.: 415). Regarding the movements of atoms, Aristotle in *On Democritus* (Simplicius, in *On Heaven* 295, 9), identifies that Democritus believed that atoms, due to their dissimilarity, move in the void, colliding with each other, but no reference is made to the beginning of atomic motion. Thus, we can assume that, since atoms and void have always existed, there has always been the atomic movement that resulted from atomic blows (ibid.: 421-2). Again, Aristotle in

[6] See also, Graham 2008, 333-52; Guthrie 1969, 382-507; Taylor 1999, 181-204.

On Democritus (according to Simplicius, in *On Heaven* 295, 11), professes that, for Democritus, atoms through the process of collision and entanglement cling closely to each other, but do not form a homogeneous substance. This is because some of them have an irregular shape, are either concave or convex, and have plenty of differences, resulting that they remain temporarily attached, until some external force disperses them. Simplicius (in *On Heaven* 242, 21) states that Democritus described the movement of atoms in void, when they are separated from each other, as well as their collisions, that lead some to their removal and others to their combination resulting in the creation of composite bodies (ibid.: 423-4). So, from the previous excerpts it is concluded that the natural philosophy of Democritus is mechanistic, that is, the movement of atoms is explained mechanically without referring to a type of movement that has a cause other than the physical composition and properties of the atoms and the void.[7]

As per Sedley, Democritus came to believe that atoms and void are real and that everything else is reduced to these two. Thus, all other objects and their properties that humans perceive through their sensory organs are structures composed at a microscopic level of atoms and void. In fact, Democritus sometimes seemed to have expressed his doubts about whether we can ultimately rely on human judgment, since it is just an atomic structure in the mind. He also concluded that there are truths at the microscopic level of the elementary particles, while in the macroscopic world things are different, even though the basic elements give the explanations for what is happening in the macroscopic bodies. In this way, however, since all human judgments, inclinations, and emotions become the result of a mechanistic physics, there is no room for autonomy, self-determination and free choice (Sedley, 1983: 33-5).

Epicurean physics is based on the simple principles that the whole universe consists of atoms and void. According to the *Letter to Herodotus* 39-44, bodies are either indivisible and unchangeable (i.e. atoms) or are compositions of atoms. Both the atoms and the void, within which they exist, are infinite. Moreover, the universe is infinite, as are the worlds within it. Epicurus' physical theory, although declaring his spiritual autonomy (Diogenes Laertius 10.13), nevertheless relied on Democritus' atomic theory, which Epicurus repeated by adding other elements and trying to oppose the hegemonic role of necessity. In particular, Epicurus maintained from the Democritean theory the atomic structure, the variety of atomic motions, and the infinity of atomic shapes with a small variation: atomic shapes are not infinite; infinite is the number of atoms having these shapes (*Letter to Herodotus* 42-3). Thus, in relation to

[7] For further analysis of Democritus' atomic theory, see Bailey 1964, 109-215; Cole 1967, 70-9 and 170-173; Furley 1987, 152-68; Jørgen 2012, 20-33; Sedley 2007, 133-66; Vamvacas 2009, 209-48.

Democritus, he offered a more economical theory. Furthermore, Democritus' theory of knowledge was very critical of sense-experience, and therefore atomic theory could not be evaluated with reference to the testimonies provided by the senses.[8] On the other hand, Lucretius in *DRN* 2.500-21 pointed out that there could be no infinite shapes, because that would mean that there would be infinite variations between the sensible qualities, we could not perceive anything distinct and the sensible impressions would be infinite. But what happens is that with the perception we can distinguish differences in temperature, colour, taste and smell, since all their graduations are within certain limits (Morel, 2012: 487-9).[9]

As for the very structure of the atom, Democritus believed that its smallness and solidity attest to its indivisibility. Aristotle, however, opposed this view, since, for the universe to have continuity, it would have to be mathematically divisible. After all, for something to be indivisible, it can neither move nor change in any way. (*Physics* VI. 10, 240b8ff). Epicurus attempted to respond to this Aristotle's objection by saying that in a way atoms have parts, ultimate parts (*minima partes*, according to Lucretius), which are the units of the measure that determine the atoms' sizes, no matter how big or small they are, and which cannot exist individually from the atoms they make up; at the same time, these ultimate parts cannot produce any movement or aggregation by themselves (*Letter to Herodotus* 59; *DRN* 1.599-634). While for atomic motions, Epicurus refined Abderites' theory by adding that atoms move at the same speed, regardless of their weight or the different paths they follow when they collide (*Letter to Herodotus* 61-2; *DRN*. 2.238-9). Moreover, Epicurus appended that atomic weight is the cause of the downward atomic motion (*Letter to Herodotus* 61; *DRN*. 2.190), while for Democritus only atomic collisions are responsible for the motion of atoms. Of course, for both Democritus and Epicurus there is no beginning to motion in the universe (ibid).[10]

In addition, the swerve (*clinamen* in Latin and *παρέγκλισις* in Greek) is an innovation of Epicurus in atomic theory. In *DRN* 2.221-4, Lucretius brought up that if weight was the only initial principle of atomic motion, then atoms would have to fall eternally downward into the void like raindrops. If this happened, then fatally the atoms could neither collide nor therefore create anything from their collisions. To explain the automatic creation of bodily combinations and then the creation of multiple worlds, we must assume that there is a minimal swerve as primitive as the relation of weight to downward atomic motion. The moral aspect of this

[8] See also, Furley 1993, 72-94; Ganson 1999, 201-15.
[9] See also, Zeller 1870, 410-35.
[10] See also, Vlastos 1975, 381-408.

doctrine is that this minimal swerve allows the free action. In other words, the *clinamen*, because of its indeterminate character, "leaves mental margin" to the idea that there may be a break in the mechanical chain of strictly natural causes. In Lucretius' text it is not clear whether the *clinamen* is a movement necessary for the voluntary decision or if it occurs after the decision, in response to a stimulus, in which case it is a condition of possibility and not the real cause of free action (*DRN* 2.184-293). It could be assumed that the motivation for Lucretius to refer to the swerve is that in this way he completed the description of the atomic mechanism and at the same time he wanted to oppose the Stoic theory of fate; but his main motive must have been that he wanted to challenge Democritus' view that necessity is the principle of all things, and therefore to present in a new way the organization of nature and to define Epicurean naturalism more clearly. It is pointed out that an explicit reference to the swerve is found only in *DRN* 2.184-293 and not in Epicurus' surviving texts. Modern scholars suggest different interpretations of this matter: some believe that Epicurus later developed the theory of the swerve, which is why it is not included in the *Letter to Herodotus*; others believe that its absence in the Epicurean texts is due to the lacunae, that is, they consider that it is absolutely coincidental; others doubt whether the swerve's author was Epicurus (ibid.: 489-90).[11]

Epicurus tried to give an answer to Aristotle's critique of Democritus by introducing the swerve. In the opinion of Democritus, all atomic motions result from atomic collisions and therefore all are forced, while there are no natural atomic motions. Aristotle, in *Physics* IV.8, 215a 1-13, on the other hand, believed that there are two kinds of motion: forced motion and natural motion; and that, if there is forced motion, then there is also natural motion, since the forced motion is opposite to natural and temporally posterior. Therefore, if there is no natural motion for natural bodies, it follows that no other kind of motion can exist. In addition, Aristotle believed that if there is a void, then there can be no natural motion, nor any other kind of motion. Thus, Democritus could not explain why there is atomic motion, neither on the basis of void nor on the basis of the nature of the atoms (since there is no natural motion) (O'Keefe, 1996: 311-2).

Like Democritus, Epicurus in his *Letter to Herodotus* 43-4 did not say that there is a need for a beginning for atomic blows. However, although any atomic blow can be caused by previous atomic collisions in an infinite course backwards, no explanation is given why these collisions occur or why there is this type of motion. After all, since the natural motion of atoms is downwards, one would only expect this to happen at a microscopic level. The only properties

[11] Cf. e.g. DeWitt 1954, 155-96; Huby 1978, 80-6.

of the atoms (that is, the shape, the size, and the weight) cannot explain where the collisions come from. On the contrary, the swerve could be the physical atomic function, on the basis of which atomic blows could be described. Nor did Lucretius mention that there is a start of atomic blows at a given point in time and therefore the swerve. In *DRN* 2.216-24, the philosopher brought up that atoms have a downward motion in void due to their weight, while in indefinite moments and in indefinite places they deviate from their orbit, so that it can be said that their motion was differentiated. The emphasis in the above verses is on the nature of the atoms, since, if the latter did not deviate from their downward course, there could be no collisions between them. Atoms, therefore, have the ability to swerve, as long as the swerve provides them with an explanatory principle - and not a temporal principle - that describes their structure and motion (ibid.: 314-5; O'Keefe 2005: 119-20).

Aristotle's critique of Democritus had nothing to do with the fact that he introduced atoms into his ontology and with the fact that he put atomic collisions being the cause of motion, but that he did not further explain this kind of motion. This is why Epicurus referred to weight, in other words, to the basic internal property of atoms, in order to explain this kind of motion. Of course, in Epicurus' theory of motion, as well, there is an explanatory problem since he considered atoms to move at the same speed. If they move at the same speed their weight cannot explain where and how the collisions between them occur. Realizing this difficulty, Epicurus introduced the concept of the swerve in his ontology. (ibid.: 315-6; O'Keefe 2005: 121-2).

In summary, while Democritus explained atomic motion based only on collisions, Epicurus set two other principles: atomic weight and the swerve. Thus, atomic weight is added as an explanatory principle of atomic motion, while the swerve as an explanatory principle of atomic collisions. As interpreted by O'Keefe, the two additional principles were added by Epicurus in response to Aristotle's objections. After all, Democritean theory could not provide an answer to the question of why atoms move, nor could it provide satisfactory explanations for the kind of movements observed in nature. Thus, the natural downward motion due to the weight of the atoms corresponds to why the motion exists, while the swerve explains how the atoms intertwine and collide. (ibid.: 316-7).

Moreover, Epicurus seemed to respond to the supposed fatalism of Democritus, stemming from his eliminativism. Democritus believed that the only things in the world in reality are atoms and void and, therefore, since sensible qualities are not true properties of bodies, the senses cannot provide us with knowledge about the world. Democritean eliminativism applies to ethics as well, and so in this restrictive ontology, human logical ability cannot be included. When

applying this theory to ethics, we may think that our actions are due to our beliefs and desires, but in reality they are nothing more than the result of the interaction of atoms within void. Democritus' argument that human actions arise out of necessity can be put in this way: 1) Human actions are merely atomic motions. 2) Atomic motions are necessitated. 3) Hence, human actions are necessitated (O'Keefe, 2002.: 167-8).

Against Democritean ontology, Epicurus believed that human agency, human reason, and moral development can exist in reality. The counter-argument to Democritus' argument offered by Epicurus in *On Nature* 34.26-30, as per O'Keefe, is neither anti-deterministic nor anti-reductionist.[12] Epicurus initially tried to prove that the position of Democritus, who argued that human actions necessarily occur, is self-refuting, because by arguing in favor of fatalism, they already presuppose their falsity. For instance, we praise, blame our interlocutors, argue and counter-argue, assuming we have reason, which is incompatible with fatalism. According to Epicurus, we have criteria by which we determine which actions happen to us out of necessity and which are "up to us". This is evidenced by the fact that when we act, we try to convince others of the actions that are due to us, while it would be useless to do so for actions that arise out of necessity. It is worth noting that Epicurus nowhere in this passage mentioned that an action that depends on us and is under our control should not be caused at an earlier time or that it should not be subject to the necessity under which atomic motions are subject. Epicurus rejected the Democritean argument as being invalid, because he considered that there is an ambiguity in the term "necessitated" in steps 2) and 3) (see above). By claiming that human actions are necessitated because atomic motions are necessitated is erroneous, so there is no reason to reject the premise 1) which is reductionistic, nor the premise 2) which is deterministic. Hence, Epicurus maybe was certain that all human actions are ultimately atomic motions, while denying that they are subject to necessity. All human actions -in a sense- may be subject to necessity, but this cannot subvert our preconception that there is a distinction between those things that are found under our rational control and for whom we have a moral responsibility and those that are not (ibid.: 168-70).[13]

[12] For an opposite interpretation, see Sedley 1988, 295-327.
[13] See also, O'Keefe 1997, 119-34.

2. Epicurus on free will

2.1 *Letter to Menoeceus* 133-4

> *Whom, after all, do you consider superior to the man who ... would deride the <fate> which some introduce as overlord of everything, <but sees that some things are necessitated,> others are due to fortune, and others depend on us, since necessity is accountable to no one, and fortune is an unstable thing to watch, while that which depends on us, with which culpability and its opposite are naturally associated, is free of any overlord? For it would be better to follow the mythology about gods than be a slave to the 'fate' of the natural philosophers: the former at least hints at the hope of begging the gods off by means of worship, whereas the latter involves an inexorable necessity.* (Diogenes Laertius 10.133-4, trans. A. A. Long & D. N. Sedley)[14]

Epicurus' *Letter to Menoeceus* 133-4 raises the issue whether or not there is a conception of free will in the Epicurean theory. By analysing the various views on the nature of gods and on death, Epicurus criticized here those who believe in fate (*εἱμαρμένη*), that is, those who believe that the gods direct human lives. On the contrary, he himself claimed that some of the events happen out of necessity, some out of fortune and some out of *παρ' ἡμᾶς*. Let us dwell on this prepositional phrase: *παρ' ἡμᾶς*. In general, the active agent, in ancient Greek, is expressed with the preposition *ὑπὸ* and genitive case, although it can as well be expressed with the preposition *παρὰ* and accusative. The fact that there are events in nature that happen *παρ' ἡμᾶς*, by us, suggests that humans can be and act as active agents. Continuing, the philosopher specified that the necessity cannot be considered responsible for what is happening, fortune is unstable, while only the *παρ' ἡμᾶς* is *ἀδέσποτον*, i.e. it is a free activity. And because of its nature, the *παρ' ἡμᾶς* is either praised or criticized, because it seems to be something we choose. Epicurus believed that humans must follow the myths about the gods, because they offer a hope of atonement through the worship towards the gods, and not fate (*εἱμαρμένη*) which implies

[14] "*Ἐπεὶ τίνα νομίζεις εἶναι κρείττονα τοῦ καὶ περὶ θεῶν ὅσια δοξάζοντος καὶ περὶ θανάτου διὰ παντὸς ἀφόβως ἔχοντος καὶ τὸ τῆς φύσεως ἐπιλελογισμένου τέλος, καὶ τὸ μὲν τῶν ἀγαθῶν πέρας ὡς ἔστιν εὐσυμπλήρωτόν τε καὶ εὐπόριστον διαλαμβάνον-τος, τὸ δὲ τῶν κακῶν ὡς ἢ χρόνους ἢ πόνους ἔχει βραχεῖς, τὴν δὲ ὑπό τινων δεσπότιν εἰσαγομένην πάντων ἐγγελῶντος <εἱμαρμένην καὶ μᾶλλον ἃ μὲν κατ' ἀνάγκην γίνεσθαι λέγοντος>, ἃ δὲ ἀπὸ τύχης, ἃ δὲ παρ' ἡμᾶς διὰ τὸ τὴν μὲν ἀνάγκην ἀνυπεύθυνον εἶναι, τὴν δὲ τύχην ἄστατον ὁρᾶν, τὸ δὲ παρ' ἡμᾶς ἀδέσποτον ᾧ καὶ τὸ μεμπτὸν καὶ τὸ ἐναντίον παρακολουθεῖν πέφυκεν (ἐπεὶ κρεῖττον ἦν τῷ περὶ θεῶν μύθῳ κατακολουθεῖν ἢ τῇ τῶν φυσικῶν εἱμαρμένῃ δουλεύειν ὁ μὲν γὰρ ἐλπίδα παραιτήσεως ὑπογράφει θεῶν διὰ τιμῆς, ἡ δὲ ἀπαραίτητον ἔχει τὴν ἀνάγκην).*".

necessity. But where *παρ' ἡμᾶς* comes from, how it is explained on the basis of atomic theory, is not analysed in these paragraphs and remains obscure. However, it seems that Epicurus conceived of a third form of causation, beyond necessity and fortune: the *παρ' ἡμᾶς*, which, however, is not adequately described.

2.2 *On Nature* 34.21-2

> *But many naturally capable of achieving these and those results fail to achieve them, because of themselves, not because of one and the same responsibility of the atoms and of themselves. And with these we especially do battle, and rebuke them, hating them for a disposition which follows their disordered congenital nature as we do with the whole range of animals. For the nature of their atoms has contributed nothing to some of their behaviour, and degrees of behaviour and character, but it is their developments which themselves possess all or most of the responsibility for certain things. It is as a result of that nature that some of their atoms move with disordered motions, but it is not on the atoms that all <the responsibility should be placed for their behaviour …>* […]. (Epicurus, *On Nature* 34.21-2, trans. A. A. Long & D. N. Sedley)[15]

In *On Nature* 34.21-2, Epicurus pointed out that there are humans who, based on their physical constitution, could achieve certain things, but fail because of themselves and not because of the atoms. Therefore, we vituperate and detest them as we do with all animals. In fact, the philosopher mentioned that volitional autonomy is not a feature of humans only, since in nature there are also self-determining animals (Long & Sedley 1987a: 109). Human behaviour and character are not shaped just by their nature, but also by their progress (*τὰ ἀπογεγεννημένα*), which is their personal responsibility. The fact that some atoms deviate from the course, might be due to nature, but the responsibility for the behaviour formed cannot be attributed to these atoms. This particular passage from *On Nature* is somewhat vague, because although there is

[15] "*[…] πολλά δέ καὶ τῶνδε καὶ τῶνδ[ε φ]ύσιν ἔχοντα ἀπεργαστικὰ [γί]νεσθαι δι' ἑαυτὰ οὐ γίνεται ἀπ[ε]ργαστικά, οὐ διὰ τὴν αυτὴν αἰτία[ν] τῶν τε ἀτόμων καὶ ἑαυτῶν· οἷς δὴ καὶ μάλιστα μαχόμεθα καὶ ἐπιτιμῶμεν, μ[ι]σοῦντες κατὰ τὴν ἐξ ἀρχῆ[ς] ταραχώδη φύσιν ἔχοντα καθ[ά]περ ἐπὶ τῶν πάντων ζώιων. οὐθὲν γὰρ αὐτοῖς συνήργηκεν εἰς ἔνια ἔργα τε καὶ μεγέθη ἔργων καὶ διαθέσεων ἡ τῶν ἀτόμων φύσις, ἀλλ' αὐτὰ τὰ ἀπογεγεννημένα τὴν πᾶσα[ν ἢ] τὴν πλε[ίσ]την κέ[κτ]ητ[αι] αἰτίαν τῶνδέ [τι]νων. ἐκ δ' ἐκ[ε]ίνης [ἕν]ιαι τῶν [ἀ]τόμων κινήσεις ταραχώδε[ις] κ[ινο]ῦνται, οὐχὶ δὲ τὰς ἀτ[όμου]ς [.] πάντως [……..]ν[……] πιπτον [……….] ἔχοντος [(lacuna approx. 45 words)]σεσθαι μαχόμεν[οι πο]λλοῖς ἅμα τῶν ἀν[θρώ]πων καὶ νουθε[τοῦν]τες, ὧ τῆι τοῦ αὐτο[ῦ τρό]που κατ' ἀνάγκην α[ἰτ]ία[ι] ὑπεναντίον ἐστίν· […]*"

deviation (*κινήσεις ταραχώδε*[*ις*]) in the physical course of some atoms, it cannot be considered responsible for the formation of human character, since this depends on the humans themselves.

2.3 *On Nature* 34.26-30

From the very outset we always have seeds directing us some toward these, some towards those, some towards these and those, actions and thoughts and characters, in greater and smaller numbers. Consequently that which we develop - characteristics of this or that kind - is at first absolutely up to us; and the things which of necessity flow in through our passages from that which surrounds us are at one stage up to us and dependent on beliefs of our own making... <And we can invoke, against the argument that our eventual choice between these alternatives must be physically caused either by our initial make-up or by those environmental influences> by which we never cease to be affected, the fact that we rebuke, oppose and reform each other as if the responsibility lay also in ourselves, and not just in our congenital make-up and in the accidental necessity of that which surrounds and penetrates us. For if someone were to attribute to the very processes of rebuking and being rebuked the accidental necessity of whatever happens to be present to oneself at the time, I'm afraid he can never in this way understand <his own behaviour in continuing the debate…> <He may simply choose to maintain his thesis while in practice continuing to> blame or praise. But if he were to act in this way he would be leaving intact the very same behaviour which as far as our own selves are concerned creates the preconception of our responsibility. And in that he would at one point be altering his theory, at another <...> <...> such error. For this sort of account is self-refuting, and can never prove that everything is of the kind called 'necessitated'; but he debates this very question on the assumption that his opponent is himself responsible for talking nonsense. And even if he goes on to infinity saying that this action of his is in turn necessitated, always appealing to arguments, he is not reasoning it empirically so long as he goes on imputing to himself the responsibility for having reasoned correctly and to his opponent that for having reasoned incorrectly. But unless he were to stop attributing his action to himself and to pin it on necessity instead, he would not even <be consistent...> <On the other hand,> if in using the word 'necessity' of that which we call our own agency he is merely changing a name, and won't prove that we have a

preconception of a kind which has faulty delineations when we call our own agency responsible, neither his own < behaviour nor that of others will be affected…> <…> but even to call necessitation empty as a result of your claim. If someone won't explain this, and has no auxiliary element or impulse in us which he might dissuade from those actions which we perform calling the responsibility for them 'our own agency', but is giving the name of foolish necessity to all the things which we claim to do calling the responsibility for them 'our own agency', he will be merely changing a name; […] *And the mind will be inquisitive to learn what sort of action it should then consider that one to be which we perform in some way through our own agency but without desiring to.* […] (Epicurus, *On Nature* 34.26-30, trans. A. A. Long & D. N. Sedley)[16]

In *On Nature* 34.26-30, Epicurus emphasized that the characteristics we form depend on us (*παρ' ἡμᾶς*), and all the things that by necessity enter through our pores in our body depend on our beliefs. But some could argue that our final choices between alternatives are caused by our original physical constitution or by environmental influences. Some others could argue against the previous argument supporting that we continue to reprimand, oppose, and try to change our fellow human beings as if they themselves are responsible for their choices and not just their

[16] "*ἔκ] τε [τῆς πρ]ώτης ἀρχῆς σπέρμ[ατα ἡμῖν ἀ]γωγὰ τὰ μὲν εἰς τάδ[ε] τὰ δ' εἰς τάδε τὰ δ' εἰς ἄμφω [ταᾶ]τά [ἐ]στιν ἀεὶ [κα]ὶ πρά[ξ]εων [καὶ] διανοήσεων καὶ διαθέ[σε]ων καὶ πλεί[ω] καὶ ἐλάττωι. ὥστε παρ' ἡμᾶς π[ρῶτον] ἁπλῶς τὸ ἀπογεγεννημένον ἤδη γείνεσθαι, [τ]οῖα ἢ τοῖα, καὶ τὰ ἐκ τοῦ περιέχοντος κ[α]τα' ἀνάγκην διὰ τοὺς πό[ρους] εἰσρέο[ν]τα παρ' ἡμᾶς π[ο]τε γε[ίνε]σθαι καὶ παρὰ τ[ὰς] ἡμε[τέρα]ς [ἐ]ξ ἡμῶν αὐτ[ῶν] δόξ[ας ...]ει [π]αρὰ τήν φ[ύ]σι[ν] α[...]υσ[……]υκ[…]θ[……]ει [….] ετησ[……….]τα[….]α[.]χε[…….]ν[.]υ[..]ωσε[……..]νεκε[(lacuna approx. 60 words)]τα τὸμ φυσικὸν χα[ρα]κτῆρα ὁμοίως καὶ τοῖς τ[…..]οις κε[νο]ῖς πόροις […τ|ῶν αὐ[τ]ῶν ἰδιοτή[των…]ο[…ἐ]πὶ πάν[τ]ων [……..]ντω[……….] ἐπειδ[(lacuna approx. 12 words)]εστήκει, ὧν οὐ[… ἀ]πολείπει τὰ πάθη τοῦ γίνε[σθαι, τὸ] νουθε[τ]εῖν τε ἀλλήλους καὶ μάχε[σ]θαι καὶ μεταρυθμίζειν ὡς ἔχοντας καὶ ἐν ἑαυτοῖς τὴν αἰτίαν καὶ οὐχὶ ἐν τῆι ἐξ ἀρχῆς μόνον συστάσει καὶ ἐν τῆι τοῦ περιέχοντος καὶ ἐπεισιόντος κατὰ τὸ αὐτόματον ἀνάγκηι. εἰ γάρ τις καὶ τῶι νουθετεῖν καὶ τῶι νουθετεῖσθαι τὴν κατὰ τὸ αὐ[τό]μα[τ]ον ἀνάγκην προστι[θείη] ἀεὶ τοῦ [τό]θ' ἑαυτῶ[ι] ὑπάρχο[ντος], μὴ οὐ[χ]ί πο[τε] δύν[ηται ταύτ]ῃ [συ]νιέναι […….]αλλ[……..] ἡμεῖ[ν ……..]πονε [(lacuna of a few words) μεμ]φόμενος ἢ ἐπαινῶν· ἀλλ' ε[ἰ] μὲν τοῦτο πράττοι, τὸ [αὐτὸ] ἔργ[ο]ν ἂν εἴη [κ]ατα[λεί]πων ὃ ἐφ' ἡμῶν αὐτῶν [ποιεῖ] τὴν τῆς αἰτίας πρό[λη]ψιν, ἐν ὧι οὗ μὲν τὸ δό[γμα ...] μετατεθε[ι]μένο[ς ...] μὴ πρ[……..]π[..]τ[…….]ο[(lacuna approx. 45 words)] τοι[αύτ]ης πλάνης. περικά[τω] γὰρ ὁ τοιοῦτος λόγος τρέπεται, καὶ οὐδέποτε δύναται βεβαιῶσαι ὡς ἐστὶν τοιαῦτα πάντα οἷα τὰ κατ' ἀνάγκην καλούμενα- ἀλλὰ μάχεταί τινι περὶ αὐτοῦ τούτου ὡς δι' ἑαυτοῦ ἀβελτερευομένωι. κἂν εἰς ἄπειρον φῆι πάλιν κατ' ἀνάγκην τοῦτο πράττειν ἀπὸ λόγων ἀεί, οὐκ ἐπιλογίζεται ἐν τῶι εἰς ἑαυτὸν τὴν αἰτίαν ἀνά[π]τειν τοῦ κα[τὰ τ]ρόπον λελογίσθαι εἰς δὲ τὸν ἀμφισβητοῦντα τοῦ μὴ κατὰ τρόπον. εἰ δὲ μὴ ἃ πο[ιεῖ] ἀπολήγοι [ε]ἰς ἑαυτὸ[ν] ἀλλ' εἰς τὴν [ἀ]νάγ[κην] τ[ι]θείη, [ο]ὐδ' ἂν ε[..]κα[……..]επ[(lacuna approx. 30 words) εἰ τὸ δι' ἡμῶν] αὐτῶγ καλούμενον τῶι τῆς ἀνάγκης ὀνόματι προσαγ[ο]ρεύων [ὅ]νομα μό[ν]ομ μετατίθετα[ι] ˙μη˙ δ' ἐπιδίξει ὅτι τοιοῦτό τι ᾧ μοχθηρο[ί εἰσι τύ]ποι προειλ[η]φότες τὸ δι' ἡμῶ[ν αὐ]τῶν αἴτιον καλ[οῦμεν], οὔτ' ἰδ[ι…… (lacuna approx. 25 words)] γενέσθαι, ἀλ[λὰ κε]νὸν [καὶ] τὸ δι' ἀνάγκην καλ[εῖ]ν πρ[ὸ]˙ς˙ ὧν φάτε. ἂν δὲ μ[ή] τις τοῦτο ἀποδείξει, μηδ' ἔχει ἡμῶν [τ]ι συνεργὸν μηδ' ὅρμημα ἀπο[τ]ρέπειν ὧν καλοῦντες δι' ἡμῶν αὐτῶν τὴν αἰτίαν συντελοῦμεν, ἀλλὰ πάντα ὅσ[α] νῦν δι' ἡμῶν αὐ[τῶ]ν ὀνομάζοντες τὴν αἰτίαν [εἶναι διαβ]ε[βα]ιούμεθα πράττε[ιν] κατὰ μώραν ἀνάγκην προσαγορεύων, ὄνομα μόνον ἀμείψει· […] ζητήσει δ' ἡ διάνοια εὑρεῖν τὸ ποῖον [ο]ὖν τι δεῖ νομί[ζ]ειν τὸ ἐξ ἡ[μ]ῶν αὐτῶ[ν π]ως [πρ]αττόμενον [μ]ὴ προθυμ[ουμένων πράτ]τειν.*"

nature or the accidental (unintended) necessity that surrounds them. The group of persons mentioned first, could, of course, argue that even in cases where we blame or praise fellow human beings for their behaviour or character, again the cause of that behaviour or character is the accidental necessity (i.e. the necessity which is not caused by an agent's intention) that affects our lives. Persons like these may, in our discussion, maintain the position that only natural and accidental causation exist, but in everyday practice they may blame or flatter humans for their behaviour, without taking into account the preconception (*πρόληψιν*) that we ourselves are responsible for our actions as well. In fact, it seems that these persons are self-defeating, since they cannot prove that everything happens out of necessity, while at the same time they continue to participate in the conversation, assuming that their interlocutors are themselves responsible for their irrational arguments. They could, indeed, go on indefinitely, claiming that their behaviour is necessary, but without empirically verifying what they claim, since in practice they still consider themselves responsible for their proper argumentation, and accordingly consider their opponents responsible for their wrong position on the issue. If, on the other hand, by using the word *ἀνάγκην* they mean the necessity that results from us (*δι' ἡμῶν*) , that is, from our own action, they simply change the name superficially, without being able to prove that we have a preconception, which erroneously determines what we call our own fault and action. Moreover, those, who support necessity, will find it difficult to respond to the objection that sometimes we act in some way as agents, without wanting these particular actions, in other words without having a natural inclination towards these.

2.4 *Vatican Sayings* 40

> *The man who says that all events are necessitated has no ground for criticizing the man who says that not all events are necessitated. For according to him this is itself a necessitated event.* (Epicurus, *Vatican sayings* 40, trans. A. A. Long & D. N. Sedley)[17]

Similarly to *On Nature* 34.26-30, Epicurus argued in short in *Vatican sayings* 40, that the person who believes that all things are necessitated cannot criticize the one who considers that not all things happen out of necessity, because, as per the theory of the former, the argument of the latter in this issue is necessitated. In other words, the question arises of the self-denial of the

[17] "*ὁ λέγων πάντα κατ' ἀνάγκην γίνεσθαι οὐδὲν ἐγκαλεῖν ἔχει τῷ λέγοντι μὴ πάντα κατ' ἀνάγκην γίνεσθαι· αὐτὸ γὰρ τοῦτό φησι κατ' ἀνάγκην γίνεσθαι.*"

one who says that everything is necessary, because in this aspect, it does not make sense to accuse the one who claims that not everything happens necessarily; since the other person's attitude of insisting that not everything happens necessarily, does happen necessarily.

2.5 Cicero, *On Fate* 21-5

> *But Epicurus thinks that the necessity of fate is avoided by the swerve of atoms. Thus a third type of motion arises in addition to weight and impact, when the atom swerves by a minimal interval* […]. *For it is not through the impact of another atom that an atom swerves. Epicurus' reason for introducing this theory was his fear that, if the atom's motion was always the result of natural and necessary weight, we would have no freedom* […]. *Democritus, the originator of atoms, preferred to accept this consequence that everything happens through necessity than to rob the atomic bodies of their natural motions. A more penetrating line was taken by Carneades, who showed that the Epicureans could defend their case without this fictitious swerve.* […] *especially as they could not discover its cause.* […] *For by conceding that there is no motion without a cause, they would not be conceding that all events were the result of antecedent causes. For our volition has no external antecedent causes. Hence when we say that someone wants or does not want something without a cause we are taking advantage of a common linguistic convention: by 'without a cause' we mean without an external antecedent cause, not without some kind of cause.* […] *Of the atom itself it can be said that, when it moves through the void as a result of its heaviness and weight, it moves without a cause, in as much as there is no additional cause from outside.* […] *nature is itself the cause of its moving in that way.* […] *For a voluntary motion itself has it as its own intrinsic nature that it should be in our power to obey us.* (Cicero, *On Fate* 21-5, 2-7, trans. A. A. Long & D. N. Sedley)[18]

[18] "*sed Epicurus declinatione atomi vitari necessitatem fati putat. itaque tertius quidam motus oritur extra pondus et plagam, cum declinat atomus intervallo minimo […]. non enim atomus ab atomo pulsa declinat. […] hanc Epicurus rationem induxit ob earn rem, quod veritus est ne, si semper atomus gravitate ferretur naturali ac necessaria, nihil liberum […]. id Democritus, auctor atomorum, accipere maluit, necessitate omnia fieri, quam a corporibus individuis naturalis motus avellere. acutius Carneades, qui docebat posse Epicureos suam causam sine hac commenticia declinatione defendere. […] cuius praesertim causam reperire non possent: […] cum enim concessissent motum nullum esse sine causa, non concederent omnia quae fierent fieri causis antecedentibus: voluntatis enim nostrae non esse causas externas et antecedentis. communi igitur consuetudine sermonis abutimur, cum ita dicimus, velle aliquid quempiam aut nolle sine causa […] de ipsa atomo dici potest, cum per inane*

The Roman statesman Cicero, in his *On Fate* 21-5, referred to Epicurus' view that the necessity could be avoided by the swerve of atoms. Specifically, in addition to weight and impact, there is a third kind of motion created when the atom swerves by a minimal interval. This motion of the atom does not result from any external or internal cause, or from the impact of the atoms on each other. Epicurus introduced the theory of swerves to save the notion of freedom, since, if the motion of atoms was always the result of natural and necessary weight, then there would be no free will in human actions. Unlike Epicurus, Democritus, who first introduced the theory of atoms, believed that bodies follow their natural motion necessarily. Carneades believed that the Epicureans could adequately support their theory without having to introduce the term "swerve", since they were ignorant of its cause. After all, in everyday speech, when some claim that they want or do not want something without a cause, they mean without an external, anterior cause. Likewise, when we say that the mind moves without any cause, we mean that it moves without any external cause. So, in the case of the atom, when it moves in vacuum due to its heaviness and its weight, it moves without any additional external cause; and this happens because the very nature of the atom is the sole cause of its motion. In the same way, the very nature of the voluntary motion is the cause of its motion.

moveatur gravitate et pondere, sine causa moveri, quia nulla causa accedat extrinsecus. […] eamque ipsam esse *causam, cur ita feratur. […] motus enim voluntarius earn naturam in se ipse continet, ut sit in nostra potestate nobisque pareat, […].*"

3. Lucretius on free will

De Rerum Natura 2.251-93

For without doubt it is volition that gives these things their beginning for each of us, and it is from volition that motions are spread through the limbs. Don't you see how also when at an instant the starting gates are opened the eager strength of horses can nevertheless not surge forward as suddenly as the mind itself wishes? For all the mass of matter has to be stirred up throughout the body, so that stirred up through all the limbs it may in a concerted effort follow the mind's desire. Thus you may see that the beginning of motion is created from the heart and proceeds initially from the mind's volition, and from there is spread further through the entire body and limbs. Nor is it the same when we move forward impelled by a blow, through another person's great strength and great coercion. For then it is plain that all the matter of the whole body moves and is driven against our wish, until volition has reined it back throughout the limbs. So do you now see that, although external force propels many along and often obliges them to proceed against their wishes and to be driven headlong, nevertheless there is something in our chest capable of fighting and resisting, at whose decision the mass of matter is also forced at times to be turned throughout the limbs and frame, and, when hurled forward, is reined back and settles down? Therefore in the seeds too you must admit the same thing, that there is another cause of motion besides impacts and weight, from which this power is born in us, since we see that nothing can come into being out of nothing. For weight prevents all things from coming about by impacts, by a sort of external force. But that the mind should not itself possess an internal necessity in all its behaviour, and be overcome and, as it were, forced to suffer and to be acted upon - that is brought about by a tiny swerve of atoms at no fixed region of space or fixed time. (Lucretius 2.251-93, trans. A. A. Long & D. N. Sedley)[19]

[19] "*nam dubio procul his rebus sua cuique voluntas principium dat et hinc motus per membra rigantur. nonne vides etiam patefactis tempore puncto carceribus non posse tamen prorumpere equorum vim cupidam tam de subito quam mens avet ipsa? omnis enim totum per corpus materiai copia conciri debet, concita per artus omnis ut studium mentis conixa sequatur; ut videas initum motus a corde creari ex animique voluntate id procedere primum, inde dari porro per totum corpus et artus. nec similest ut cum impulsi procedimus ictu viribus alterius magnis magnoque coactu. nam tum materiem totius corporis omnem persipicuumst nobis invitis ire rapique, donec eam refrenavit per membra voluntas. iamne vides igitur, quamquam vis extera multos pellat et invitos cogat procedere saepe praecipitesque rapi, tamen esse in pectore nostro quiddam quod contra pugnare obstareque possit? cuius ad arbitrium quoque copia materiai cogitur interdum flecti per membra per artus et proiecta*

Lucretius, the Roman poet and philosopher of the 1st century BCE, whilst being a follower of Epicurean philosophy, dealt as well with the question of the causes of atomic motion. In more detail, in his work *DRN* 2.251-93, by asking rhetorical questions, he tried to explain to his readers that the atomic deviation is the cause of free will. He, then, used a simulation from the field of horseracing to analyse the difficult concept of volition: Specifically, he claimed that horses also have an internal impulse (which is caused by the atomic deviation) that causes them to start running, that their movement starts from their mind and their will; and then spreads to the other members of their body. After all, Lucretius continued, it is not the same when we move after someone or something has hit us, pushed us or forced us; in this case, the members of our body move against our will, until our will can be imposed on them. Sometimes, an external force pushes us to move on, while something within us has the strength and resists impulse. It is precisely this that controls the matter and the members of our bodies and forces them to change course or to stop their impulse or to restore them to a state of serenity. In the same way, Lucretius thought, we must also consider about atoms: in other words, there is another cause for their motion beyond the weight and the impacts, from which the power within us derives. Weight does not allow us to conclude that all motions are due to impacts, which are extrinsic forces. However, the fact that the mind, whenever it acts, neither obeys an inner necessity, nor is passively guided, is the result of the slight swerve of atoms in indefinite space and time.

The structure of Lucretius' argument in *DRN* 2.251-93 consists of a main premise (2.251-60), a second premise where the two examples are set (2.261-83) and the conclusion (2.284-93). Schematically, the argument is formed thusly:

A) If the swerve does not exist, neither does volition. (2.251-60)

B) But volition exists. (2.261-83)

C) Thus, the swerve exists. (2.284-93)

The argument is of the form “modus tollens”, that is: 1) if not A, then not B, 2) but B, 3) thus, A. The structure of the argument is in line with Epicurean methodology, since A is an unobservable state of affairs (*ἄδηλον*), while B is an observable state of affairs (*ἐναργές*). More

refrenatur retroque residit. quare in seminibus quoque idem fateare necessest, esse aliam praeter plagas et pondera causam motibus, unde haec est nobis innata potestas, de nilo quoniam fieri nil posse videmus. pondus enim prohibet ne plagis omnia fiant externa quasi vi. sed ne mens ipsa necessum intestinum habeat cunctis in rebus agendis et devicta quasi cogatur ferre patique, id facit exiguum clinamen principiorum nec regione loci certa nec tempore certo.”.

specifically, the first premise (2.251-60) is in form of a conditional: if the atoms did not swerve, then there would be no free will. Then, in the second premise, the two examples are presented as evidence to conclude that there is free will. The two examples express two different cases where free will is observed, as the example with the horses is related to pursuit, while the example with humans, resisting against external forces, is related to avoidance. In fact, what horses seem to be chasing and people avoiding, is the pursuit of pleasure in the first case and the avoidance of pain in the second one. The outcome is inserted in verse 2.284 with the conjunction *quare*, where Lucretius concluded that atoms swerve.

It has been suggested that, in formulating this argument, the philosopher intended to demonstrate that non-observable atomic swerves, at the microscopic level, are the cause for the observed ability of living beings (and therefore humans) to initiate a motion, at the macroscopic level, by an act of will (Asmis 1990: 280-1). In these verses it is emphasized that, the term "swerve" is repeated three times in different grammatical forms: in verse 2.253 we find *declinando* which is a dative gerund of the verb *declinare*; in verse 2.251 there is the grammatical form *declinamus*, i.e. first person plural of *declinare*; finally, in verse 2.292 we see the noun *clinamen* which is cognate with the verb *declinare* (*παρεγκλίνειν*). It is clear, that the philosopher used the rhetorical scheme of repetition to emphasize the importance of the swerve. In addition, we find an analogy between verses 2.259-60, where it is stated that our will leads us to deviate from our predetermined movements in an indefinite place and time (*nec tempore certo nec regione loci certa*), and verses 2.292-3, where it is indicated that a small atomic swerve appears in an indefinite place and time (*nec regione loci certa nec tempore certo*); since exactly the same phrase is used with a slightly different order of words. By using this correlation, Lucretius seemed to seek linking the atomic swerve at the microscopic level with free will at the macroscopic level. It is also stressed, that the local and temporal modifiers are emphatically set in the last verse of the argument, precisely to emphasize the local and temporal indeterminacy. Since Lucretius had argued that there is a third cause of motion, in *DRN* 2.288-93, he explained that weight can save the mind from collisions, in other words, from external necessity. In addition, what saves the mind from internal necessity is the atomic swerve in an indefinite place and time, which is responsible for the ability of our will to start an indefinite space-time movement. It looks as if the swerve is activated at the beginning of each voluntary atomic motion.

Previously and specifically in verses 2.216-24, Lucretius referred to the fact that atoms, while in a downward motion due to their weight in space, at times indefinite and indefinite places

(*incerto tempore…incertisque locis*) deviate in some way from their orbit and, as a result, their motion is differentiated. Moreover, he continued saying that if this deviation did not exist (*nisi declinare solerent*), all atoms would fall like raindrops on the abyssal void, and neither touch nor collision of the original elements could occur, and therefore nothing could be created. After all, the philosopher demonstrated further in verses 2.235 *ff.*, that the void never shows resistance against anything. Therefore bodies, although they have different weights, move at the same speed through void. However, the fact that all bodies, whether heavy or light, move at the same velocity, this does not allow the heavier bodies to fall on the lighter ones, to strike with them and to produce the variety of motions observed in nature. So, atomic deviation (*inclinare*) is necessary for bodies, regardless of their weight, to move sideways when they fall vertically into void. Furthermore, the rhetorical question posed in verses 2.249-50 (*sed nihil omnino <recta> regione viai declinare quis est qui possit cernere sese?*) again raises the question of atomic deviation (*declinare*). Thus, in the aforementioned passage, Lucretius tried to introduce his readers to the subject of deviation.

4. Contemporary interpretations

4.1 David J. Furley

Furley believed that the Greeks of Epicurus' era developed theories of human behaviour without resorting to the concept of free will. Neither Lucretius, by using the term "*libera voluntas*", did appear to refer to free will. Epicurus, trying to show that morality is not meaningless, used the concept of the swerve (*παρέγκλισις*). Hence, many studies have focused on answering how the philosopher implemented the concept of the swerve to explain human behaviour (Furley 1967: 161-2).

In line with the traditional interpretation of Epicurean theory, as suggested by Bailey[20], the human soul is made up of atoms in constant motion. Through sense perception, images (*εἴδωλα*) of the atoms of external objects are received by the sense organs, and through their collisions they cause an impulse to the atoms of psyche, which in turn alter their movement. These changes give an impression (*φαντασία*) of the nature of the object and cause a reaction (*πάθος*) of pleasure or pain. Thereafter, the reaction stimulates a movement to take or avoid the object. However, at some point in this sequence of events, there is a discontinuity. This discontinuity is caused by the swerves of atoms, which did not exist in the original conditions. Referring to the above interpretation, there is no causal connection between the stimulus and the swerve, since the appearance of the swerve is a fact completely isolated from the original events. Therefore, there is a paradox: the atomic swerve produces unexplained, sudden, and rare motions, but it cannot produce intentional actions that are accountable for moral evaluations. This paradox the traditional interpretation tried to solve by introducing the term "*concilium*" (i.e. aggregation); that is, volition is not produced by the motion of a single atom, but by a *concilium* of soul atoms. The random swerve of the single atoms is the cause that the *concilium* moves in an appropriate way (ibid.: 162-3).

Epicurus confirmed that weight is the cause of atoms moving at a steady rate downward and that the universe is infinite. At the same time, he added that the atoms deviate, swerve from their downward course at indefinite times and at indefinite places. Of course, this swerve is minimal, since we can see only things that fall in straight lines; nevertheless, the philosopher gave no further explanation as to whether all atoms swerve and at what frequency (ibid.: 173). In *DRN*, in the passage where *libera voluntas* is mentioned, Lucretius attempted to prove that

[20] For a traditional interpretation see: Bailey 1964, 384-437.

clinamen is a kind of atomic motion. In particular, following the theory of Epicurus, Lucretius responded to two views of Democritus' traditional atomism: that free atoms were always in motion in all directions within the void naturally; and that in a compound body, the atoms that make it up are connected to each other, thereby inhibiting their own physical motion and adopting the motion of the composite body (ibid.: 170). In *DRN* 2.251-93, the philosopher did not claim that voluntary actions must be uncaused, but that this causal chain must not extend infinitely backwards. In voluntary action, e.g. the behaviour, that is manifested and perceived by humans, is the last thing that happens, hence there is a time gap between the stimulus we observe (the opening of the gate) and the physical movement of the horses, although it seems to be happening simultaneously. The opposite is exactly the case when the movement is forced: then the movement starts from the body and gradually expands to the will (ibid.: 176-7).

The experience makes it clear that there are actions arising from *voluntas* and practices arising from external forces. Likewise, the same distinction must apply to atoms, as long as everything has a cause: weight saves the mind from the external force of collisions; and the swerve (*clinamen*) saves the mind from inner necessity (ibid.: 182). In *DRN* 2.289-93, the inner necessity, to which the mind is said to disobey, is the necessity that has prevailed in the original composition of the psyche. It seems that *voluntas* is a break from the succession of causes from a single swerve of a single atom. Thus, in Epicurean psychology, the swerve has a negative role, in that it rescues *voluntas* from necessity, although it is not found in any *voluntas*' act. In addition, the swerve is not referred in Lucretius' quote about voluntary action, because it plays an indirect role. After all, the swerve theory simply ensures that human actions are not caused by the combination of environmental impact with gene origin (ibid: 232-3).[21]

Referring to Epicurean theories, the soul consists of three or four components. In *Letter to Herodotus* 63, Epicurus declared that it consists of *pneuma*, heat and a component of finer quality. Correspondingly in *DRN* 3.231 *ff.*, Lucretius specified *aura* (*pneuma*), *vapor*, *aer* and a finest element. In Epicurean philosophy, atoms have only the qualities of shape, size, and weight. Thus, changes in the psyche can only result from the rearrangement of already existing atoms or the addition and subtraction of atoms from other elements of the psyche. These proportions of the elements vary from one soul to another, e.g. in *DRN* 3.294-5, Lucretius argued that the hot element outweighs in those hearts and minds which are more easily flooded by anger (ibid.: 196-7). Humans' character, then, and their reactions to environmental

[21] See also, Saunders 1984, 37-59.

influences are predetermined from the moment of their birth, based on the percentages in which they have the elements of the psyche. Learning and cognition, however, can improve people, without meaning that their natural differences can be eliminated. However, even these natural differences are under the influence of reason (*ratio*), and so nothing prevents us from seeking a living worthy of the gods (*DRN* 3.307-22). The exercise of free will and logic can control the natural tendencies of humans, which result of the imbalance in the composition of the soul. In general, learning cannot add or subtract from the existing atoms that make up the soul; the only thing it can do is to rearrange the existing atoms. For instance, learning cannot decrease the hot atoms of a passionate human soul; it can, however, push them to less effective regions (ibid.: 199-200).

Moreover, the Latin philosopher came back to the question of will in *DRN* 4.877-90. More specifically, while trying to explain what power moves all our body mass, he repeated that motion simulations are presented in our mind and activate it. Then, there is the will: i.e., no one begins to do something unless their mind has previously seen what they want; and what they see in advance is the picture of the thing they will want. So, once the mind moves itself and the will to move forward arises, it immediately pushes the soul, whose power is divided into all the members and all the organs of the body. From the above passage, it becomes apparent that Lucretius believed that an *imago* had to precede the mind before there was a movement. More precisely, before one begins to walk, there must precede a sequence of events: 1) *Simulacra meandi*, which are among the innumerable *simulacra* that are always in the air, strike the mind; 2) then, the mind has to concentrate on walking, so these *simulacra* make up the image, while others do not; 3) after that, the will is activated; 4) in the end, the mind gradually transmits movement throughout the body. Of course, in this passage, Lucretius did not mention anything about the atomic swerve, which saves voluntary action from necessity (ibid.: 214-5).

In *DRN* 3.566-75, Lucretius mentioned that the soul is alive only when it is in the body. Especially it is emphasized that the atoms of the soul are scattered throughout the veins, the flesh, the nerves and the bones and are firmly held by the whole body. That is, they are restricted and cannot be removed. And because they are inside the body, they move the senses, but when they are out of the body, after death, they cannot do that. Besides, after death, the atoms move in the air and their cohesion disappears. In the opposite case, that is, if the soul could maintain its cohesion and the movements it performed inside the body, then the air would become a body

and a living organism (ibid.: 229).[22] In the above verses, Lucretius pointed out that the function of the soul depends on the coordinated and organized movements of the atoms. At the same time, it should be noted that the philosopher could not believe that each collision of the atoms of the soul and the atoms of the *simulacra* had any result on the atoms of the soul, which were completely determined by the atoms of *simulacra*, which entered the body. The result must, in part, be determined by the state of the atoms of the psyche at the time of impact. The atoms of the soul, moreover, could resist the atoms they collided with, because of their weight. Especially, Epicurus stated in his work that the weight of an atom can counteract the force of striking another atom. Note that in *Letter to Herodotus* 61 no movement is faster than another, neither the upward movement, nor the lateral movement due to strokes, nor the downward movement due to the weight of the atoms themselves. And this is because for as long as any of these motions override, for as long as the atom will move as fast as a thought. This movement of the atom will continue until it is stopped either by an external cause or by its own weight which neutralizes the force of the blow. So, according to the above quote, atomic weight causes the downward movement again, shortly after a collision has pushed the atom into an upward or lateral motion. Hence, the atoms of the psyche may be small and agile, but their weight prevents them from colliding into a completely new pattern with the atoms of the *simulacra* entering. Weight, in other words, ensures a mostly consistent continuum and coherence of psychic behaviour (ibid.: 230-1).

Following the Epicurean psychology, every human being is born with a soul, which has a predetermined proportion of the four different kinds of atoms (i.e. atoms of *aura*, of *vapor*, of *aer* and of a finest element). The interaction between the soul and the external environment results through atomic images (*εἴδωλα*), that emanate from objects and can reach the soul through the sensory organs and the mind. From their childhood, humans experience feelings of pain and pleasure: pain is the result of the disruption of the movement of the atoms of the soul, caused by the lack of a thing; the feeling of enjoyment comes either from restoring disturbed movements and the resulting serenity, or from the state of serenity itself. One learns to associate external objects with pain or pleasure. A sense of scarcity is an incentive to fill this scarcity; thus, one induces an impulse towards an external object, which they know will provide them with deficiency. In general, feelings, character and behaviour are genetically predetermined by mental makeup. This, however, does not imply that the movements of the soul are predetermined from the outset, since an atomic swerve can cause discontinuity. The atomic

[22] Cf. Epicurus, *Letter to Herodotus*, 65-7.

swerve disrupts the genetically inherited motions of the soul, creating new motifs that cannot be explained by the original psychic composition. As a result it is understood that there is continuity and discontinuity; on the one hand, the character of each individual is to some extent predetermined by the original configuration of her soul, since the proportions of the atoms of different kinds remain the same; on the other hand, atomic motions are not predetermined and can be modified by learning, so the human character is mainly adaptable (ibid.: 233-4).

In addition, humans who have been influenced by Epicurean philosophy learn to distinguish which desires are natural and necessary, which desires are natural but not necessary, and which desires are neither natural nor necessary. They learn that pleasure is the absence of pain, so they stop feeling the pain of wanting an extra pleasure; they learn to control their emotions and become self-conscious, so they no longer feel a desire for something inappropriate. The soul of humans who have been taught the Epicurean philosophy is a product of their own beliefs and actions, forasmuch as their freedom rests on the fact that they have learnt not to be tempted by inappropriate desires. At the same time, Epicurus may have wanted to point out that the criterion of ethics lies in our ability to act after our influence by persuasion and not by violence and necessity (ibid.: 234-6).[23]

4.2 David N. Sedley

According to Sedley, Epicurus' main philosophical problem concerned ethics: i.e., if it is necessary to act as we do, it implies that an action neither depends on us, nor can be up to us; this in turn implies that we cannot be morally responsible for our actions. In other words, Epicurus raised the problem of determinism, whilst a supporter of free will. At the same time, Epicurus, although influenced by Democritus' atomic theory, still disagreed with him in some regards, since, according to the Pre-Socratic philosopher, all phenomena and human behaviour are subject to natural laws of atomic motion; that is, all phenomena and human behaviour are necessary. Therefore, Epicurus partially modified Democritus' theory and introduced the term "swerve", which could free human behaviour from rigorous determinism and partially offer indeterminacy to atomic motion (Long & Sedley 1987a: 107). Of course, it is worth noting that Democritus simply failed to discern the consequences of determinism for human action. On the other hand, Epicurus, with the introduction of the swerve, seemed to oppose someone who deliberately subsumes the whole range of human behaviour into mechanistic determinism. He

[23] See also, Frede 2011, 13.

may have had in mind fourth century Democritean-natural philosophers, like his teacher Nausiphanes (ibid.: 108). The swerve gives the natural ability to atoms, that under normal conditions move in void with equal velocity in parallel paths, to deviate and collide at indefinite times, changing their course. In this way the swerve also contributes to the necessary condition for living beings to be able to behave autonomously and in a way like if they have free will (Sedley 1983: 11-2).

Epicurus' purpose in *On Nature* was to show that someone who claims that there is no free will is self-defeating and that there is room for an animate being to be autonomous, without its character and behaviour necessarily reduced to the movements of the atoms that make up that specific animate being. Particularly, in *On Nature* 34.21-2, Epicurus obviously made a distinction between wild animals that we do not blame when they behave inappropriately, and animals that have self-efficacy, so when they behave inappropriately, we hate and blame them. The failure of self-determined animals (including humans) to behave in the appropriate way is due to themselves and not to the atoms of which they are composed of; i.e., they do not identify themselves with the atoms that make them up. Their actions and behaviours are not due to the nature of the atoms, but to specific characteristics they develop. And the structure of atoms may be responsible for an unexpected movement, that occurs in the atoms of their mind, but self-determined beings have the ability to transcend this disturbed motion.[24] When we are born, we are merely atomic mechanisms and only when we form characteristics beyond our original composition do we become responsible for ourselves. The distinction, between the characteristics we shape ourselves and the atoms, is transcendent and not just of a different scale. In other words, these moral characteristics are non-physical properties and are not mere differences between the microscopic level of atoms and the macroscopic level where physical properties, such as colour, are observed in bodies. Once humans become responsible agents, this situation affects their initial composition and affects the atomic motion that shapes their subsequent behaviour (ibid.: 38-9).

Sedley believed that Epicurus in *On Nature* 34.21-2 and 34.26-30 emphasized that physical and psychological causation are distinct from each other, and this distinction is necessary for the understanding of responsibility and is the starting point for the answer to determinism. After all, in keeping with the philosopher, self is not just an atomic synthesis, which is reduced to a

[24] As per *The Cambridge Dictionary of Philosophy*, the term "transcendentalism" is a religious-philosophical viewpoint, according to which "philosophical truth could be reached only by reason, a capacity common to all people unless destroyed by living a life of externals and accepting as true only secondhand traditional beliefs".

physical causal chain. If we accept the above claims, the question that arises is how the corporeal mind can ultimately dominate and control the body in such a way that the atoms move along these lines that cannot be explained based on physical laws. So, as claimed in Epicurus' theory, volitions (*βούλησις*) are a reality for humans and their nature; what remains to be answered is how these psychological entities are metaphysically and causally related to the mind's atoms. The explanation that volitions are merely epiphenomena, causally determined by atomic motion is questioned, whereas for the philosopher it is unambiguous that volitions have a causal function, which is discrete from that of the atoms. Hence, although the atomic constitution is responsible for the rowdy motions of the mind-atoms, humans are endowed by nature with the ability to make decisions that exceed those motions. The atomic makeup of the human psyche determines the natural temperament; however, since psychological causation affects atoms, with the contribution of reason, humans can change and determine their temperament (Long & Sedley 1987a: 110).

Epicurus claimed that, since there is a plethora of possibilities of how we may act, what we after all choose to do is not predetermined, but it is up to us; otherwise, our morality and our critical thinking would be meaningless. In other words, determinism cannot be a valid theory for understanding and representing the world. Epicurus argued that all humans have the preconception of their own agency, which is responsible for the behaviour they display; and if a determinist does not prove that the preconception incorporates an incorrect description of the facts, then the evidential force of the preconception remains valid (ibid.: 108). Furthermore, the determinists are unable to interpret "mixed" actions, i.e., those actions which are freely performed, but unwillingly, in order humans to avoid something worse, since they cannot distinguish the voluntary from the necessitated elements of them. Besides, if our volitions could in all cases be interpreted because of the atomic motion in the soul, then all human activity would be mechanistic and could be fully described by natural laws. But this would result in psychological entities such as belief and volition to lose their descriptive and interpretative role for human nature. Epicurus, thus, to debate the mechanism, indicated that the volition actually exists and is a causal factor of human behaviour, which cannot be explained by natural laws and the model of atomic motion (ibid.: 109).

In short, the self we develop is not the result of the already existing atoms of which it is composed, but of the ability we have, to control them. That is why we must always keep in mind the distinction between the atomic and the psychological level of truth. Of course, one could disagree by claiming that the self and mental states are secondary properties, so it does

not seem possible that they can control the formation of atoms. Epicurus, however, could have again refuted this argument, saying that if it was true, then it would mean that determinism, which is self-refuting, would also be valid; but that does not make sense. In addition, the philosopher could have answered that there is nothing that makes it impossible for the secondary properties to have an impact on the atomic formation. The fact that primary physical laws constitute the explanation of atomic motion, does not preclude secondary properties from being the causes of the behaviour of atomic composition (Sedley 1983: 39-40).

Sedley emphasized that the term "swerve" is not mentioned by Epicurus in *On Nature* and considered this to be the case because the swerve could not contribute to the rejection of the reductionist argument. This is because even if it reduces human behaviour to a non-deterministic atomic motion rather than to a deterministic one, it could still not be explained how an autonomous self can transcend the atomic composition. Cicero stated in *On Fate* 23 that Epicurus introduced the term "swerve", because otherwise the atoms of the mind would necessarily be guided only by their natural weight and there would be no room for the existence of a motion dependent on us ourselves. Providing this explanation, Cicero failed to understand that the kind of cause that activates the will acts by exceeding the atoms (of which it is a property) and transcends the natural laws of atomic motion, introducing motions which would not arise, if the atoms continued to move in their own way, without intervention (ibid.: 40-1).

The swerve is called upon to play the role of the minimum absolute randomness factor, which introduces such a small indeterminacy, which cannot completely disrupt the observed regularities of atomic motion. It can, however, lead the atoms of the mind to move beyond their predetermined course, something that volition could not otherwise succeed. A free-moving atom can either follow the course which it had until then or follow some other parallel neighbouring courses. Whatever the course of the atom is, there will be other possible pathways that it could then follow, that are partly due to the atomic swerve and partly due to atomic collisions, which may result from the undetermined behaviour of some other atoms. Correspondingly, the possible pathways of an atom multiply indefinitely, which not only expands but can completely reverse the deterministic flow. Of course, it is always very likely that the course of the atom from one collision to the next will be almost the same as the one that would follow if it moved in a straight line (ibid.: 41-2).

Sedley believed that there is no natural cause that provokes a particular route to be chosen among the plethora of possible routes. In Epicurean physics, the collisions, the weight and the swerve are mentioned as physical causes; as the will is not included, it should be considered as

non-physical. For living beings, then, the will is a non-physical cause of their movement, which does not transcend and set aside the laws of nature but chooses among the alternative possibilities which laws of nature leave open. Epicurus adopted a parallel view to the swerve, which would prevent future events from being fully predetermined and independent of our desires (ibid.: 42-6).

Regarding *DRN* 2.251-93, the conclusion reached by Lucretius' reasoning is that since the principles of atomic motion identified earlier, namely atomic weight and collisions, are deterministic, there must be a non-deterministic third principle, namely the swerve. The philosopher came to this conclusion having previously observed that there is in some living beings the possibility of initiating a movement which is not predetermined. In other words, the will is a source of non-determinism, that can redirect atoms to different paths other than the mechanistic ones (ibid.: 47).

Thus, the swerves are non-deterministic elements that allow the will, which is a property of the mind, to control the physical processes of the mind and consequently the whole body, so that living beings escape from the law-like regularity of natural phenomena. *DRN* 2.251-62, where it is pointed out that humans deviate in their movements in an indefinite space and time because that is what they want, presents similarities with *DRN* 2.284-93, where it is stated that there is a small atomic deviation in indefinite space and time. As per Sedley, there is a correlation between the will and the swerves, so long as the will is activated in a group of atoms of the mind where the possibility of swerving is always subdued. Still, Epicurus could have just analysed voluntary motion as non-reductive and as an autonomous event from which new paths of motion begin, thus undermining determinism. The philosopher, however, added the swerve to the theory of motion to ensure that the changes brought up by the will in atomic paths could be physical (ibid.: 48-50).[25]

In conclusion, Sedley suggested an anti-deterministic interpretation of Epicurean theory, inasmuch as he believed that Epicurus was opposite to determinism of Democritus and Nausiphanes. Indeed, he thought that there is a distinction between “physical causation” and “psychological causation”; the physical causation is subject to and is explained through physical laws, i.e. from the physical formation of atoms, their weight and their collisions. On the other hand, the psychological causation is due to volition that is anchored in the mind; it is not opposite to physical laws but cannot be explained by them. Not only human but also some other

[25] For the issues of responsibility, indeterminism, and the variety of reduction, see also, Mitsis 1988, 129-65.

animate beings, are self-determined, and their volition is their capability to choose from alternative options. Therefore, volition is related to ethics and to our responsibility since the choice of our actions is up to us.

4.3 Elizabeth Asmis

According to Asmis, Epicurus believed that free will could not go hand in hand with determinism, so he introduced the term "swerve", which is a natural form of indeterminacy, in order to describe and determine free will. Asmis, in fact, distinguished the problem of free will into two separate problems: the historical problem, which concerns the function performed by the swerve according to Epicurus in relation to free will; and the philosophical problem of how much the solution proposed by Epicurus has some philosophical value. Scholars such as Bailey, to save free will through an undetermined atomic motion, proposed that the automatic swerve of the atoms of the mind is translated into a conscious spontaneous motion, i.e. into a volitional motion. (Asmis 1990: 275-6).

Although Asmis maintained that Epicurus was influenced by Aristotelian theory of motion, she believed that the beginning of voluntary motion lies in the act of striving, which is called *ὄρεξις* as per Aristotle and *voluntas* as per Lucretius and Epicurus introduced the swerve as the beginning of voluntary movement.[26] Asmis followed Bailey's interpretive line, adding that voluntary movement can be detected in all animals in general and not just humans. A particularly interesting question for Epicurus scholars is when he grasped the concept of the swerve. The swerve, in the opinion of Asmis, is not a continuous motion, being the downward motion due to atomic weight and the lateral and upward motion due to atomic collisions; this is why the swerve is nowhere mentioned in *Letter to Herodotus*. Still, Lucretius in *DRN* 2.221-4 emphasized that atoms could not collide if they did not swerve, making the problem even more difficult, because Epicurus did not refer to the swerve along with the downward motion caused by atomic weight. (ibid.: 277-9).

Asmis believed that the inner necessity from which the swerve saves the mind is the initial formation of the soul (*DRN* 2.288-93). She distinguished in Lucretius´ words two kinds of necessity in the mind: the external necessity, which results from the atomic *simulacra* that strikes the mind from the outside, and the internal necessity. Lucretius believed that

[26] For a more detailed analysis, cf. Asmis 1970.

determinism was synonymous with necessity. That is why he wanted to save the mind from the necessary motion that arises from our nature by introducing a causal interruption at the beginning of each voluntary motion. In accordance with Epicurean theory, the ability of animals (but also children) to choose their purposes is in a way a free will. As far as humans are concerned, when they have fully developed their logic, this ability to choose evolves into the ability to choose in accordance with logic, i.e. into the ability to choose freely (ibid.: 282-4).

Asmis did not agree that the will is an emergent property that uses the atomic swerve in order for atoms to follow an undefined course of motion. First, she reported, that it must be determined what exactly "emergent" means. If "emergent" means the "new", i.e., what does not yet exist at the microscopic level of the unseen atoms, this implies that all the features of our experience are "emergent"; at the same time, "emergent" could mean the "unpredictable" or "unexplained" based on the underlying atoms. So, one might wonder, however, that it seems as if the features of our experience cannot be traced back and explained in principle on the basis of atomic formations. But, in line with Epicurean physics, everything that is part of our experience or of our thought is caused by atoms that have specific physical properties, void and nothing else. Since every part of our experience can be explained by the structure of atoms and natural laws, this means that every part of our experience is ultimately reduced to atoms, although we cannot describe and explain this reduction in detail. In this way, the body's will to start moving, which is perceived at the macroscopic level, can be explained as the result of the underlying atoms, to which it exerts an effect. This interaction between will and underlying atoms could be explained as an atomic activity. Epicurus believed that, from our sensory perception and experience, we can understand that the will is not something predetermined. When a person wishes to perform an act, then an undetermined swerving motion occurs within the complex of the atoms of the mind. This sequence of actions constitutes the will, while the swerve cannot prevent desire, unless it is a component of another desire, nor is it a component of an independent desire. However, the question of how swerving motion becomes will is a question to which Epicurus did not seem to have offered an answer, although he had shown that there is a motion that allows will to be free and that is the cause of this very free will (ibid.: 289-91).[27]

[27] Cf. Purinton 1999, 253-99.

4.4 Tim O'Keefe

In *On Nature* 25, Epicurus insisted against those who declared that everything is necessitated. On the contrary, he believed that humans manifest some psychological states, which differ from the atoms of the soul and are the cause of their actions. As specified by O'Keefe, Epicurus was convinced that reason enables people to be agents, i.e., to shape their character, to control their actions, and therefore to accuse or praise their fellow human beings for their behaviour. [28] In *On Nature* the way the philosopher described the fact that reason is the cause of human character and behaviour, is both reductionist and causal deterministic. In fact, O'Keefe asserted that the argument expressed in this passage is neither anti-deterministic nor anti-reductionist. In respect to Epicurean reductionism, bodies at the macroscopic level are not different from microscopic atoms, nor do they have a causal force that atoms do not have. On the contrary, they are the compositions of atoms, so their properties and causal forces are explained based on the atoms of which they are composed of, of the atomic motions and of their relations. The mind is a macroscopic body and an atomic composition as well, so its properties and causal forces are explained by reduction to the microscopic level. In short, mental processes can be identified with atomic processes (O'Keefe 2002: 153-5).[29]

Similarly, Lucretius in *DRN* 3.177-207 clarified that the texture of the mind is very thin, since it is formed by extremely small particles. In fact, the philosopher said that one can understand this by observing that the mind moves faster, than anything else our eyes can see in nature. Because it operates at such a high speed, it must be made of infinitesimal and round elements, so that the slightest impulse mobilises them. He then pointed out that poppy seeds, which are also smooth and round, can be scattered by a gentle breeze. The analogy of the constituents of the mind with the seeds of the poppy is made to emphasize the identification of mental processes with atomic motions. In *Letter to Herodotus* 63, Epicurus argued that the mind moves the body and that the soul is a body, since only bodies can move other bodies. The philosopher's position that the mind is the cause of the body's motion contradicts the interpretation of Annas (1992, 129), according to which other facts apply to the atoms and others to the mind; and the events concerning the mind supervene the atomic events, without being able to be reducible to them. Annas claimed that only atoms and void exist per se, while mental phenomena are causally dependent on atomic phenomena. For Epicurus, however, it was important to argue that the

[28] Cf. Annas 1993, 70 *ff.*
[29] Cf. Long 1986, 49-60.

mind can also be the cause of atomic motion and it is not just an epiphenomenon and a supervenient property of atoms. The materiality of mind and soul seems to be supported by Lucretius in *DRN* 3.161-7, where he emphasized that the mind gives impetus to the body members, lifts the body from sleep, changes our appearance and directs humans. He brought up that all this happens through touch, which can only take place between material bodies. We understand, then, that Lucretius specified the type of causal relation of bodies, which becomes possible through touch. After all, in Epicurean theory non-physical things, such as void, can be adjacent spatially, without being able to move other things through touch (ibid.: 156-7).[30]

In general, O'Keefe's view of the mind can be summarized in this way: First of all, he believed that the mind is a real thing, which is nothing more than the atoms that make it up. Secondly, although the mind has some properties and powers which do not exist in the atoms of which it is composed of, it nevertheless possesses these, thanks to the atomic properties and atomic relations, which also explain its properties and powers. In *On Nature* 34.26-30, Epicurus tried to show that someone who claims that everything necessarily (*κατ' ἀνάγκην*) happens is self-defeating, which is why Epicurus' argument is considered anti-deterministic. O'Keefe preferred to call the argument anti-fatalist, in order to avoid interpretive errors. This is because someone, who claims that all events occur out of necessity, at the same time considers that our decisions do not constitute the cause of these events. This position is called "fatalism", and the question remains whether Epicurus considered causal determinism to include fatalism (ibid.: 160).

By analysing *On Nature* 34.26-30, O'Keefe stressed that the question is whether the characteristics we develop depend solely on us. In addition, he believed that there is a remarkable distinction between humans, who, among alternatives, can choose how to evolve, and wild animals that do not have this ability. Lucretius, as well, indicated this distinction (*DRN* 3.288 *ff.*), emphasizing that lions, which are composed of more fire atoms, are more easily overwhelmed by rage, while deers, composed of more air atoms, are more shy and look like they are trembling. In the human race, however, although education makes people relatively equal, the initial signs of the nature of the mind remain in each; so, one person may be more irritable, another may be easily overwhelmed by fear, one may not be patient and may not tolerate insults. In other words, there is a variety of human characters and consequent behaviours. Nevertheless, Lucretius assured his readers that a life worthy of the gods is possible. This is because the remnants of our original nature, which cannot be eliminated by

[30] See also, O'Keefe 2010, 61-84.

philosophical thought and reason, are too small to deprive us of a life like that of the gods (*DRN* 3.307-22). Referring to *On Nature* 34.26-30, O'Keefe believed that our character and actions depend solely on us because we have reason and can think about the consequences of our actions, something that wild animals cannot do (ibid.: 163-4).

In the same passage, Epicurus tried to prove that someone, who claims that everything happens out of necessity, self-denies, because the fatalist already presupposes the falsity of his position. It is also emphasized that what makes us the causes of ourselves is our logic. Epicurus seemed to believe that the fatalist, by claiming that everything necessarily happens, is like questioning the right reason, and seems to be self-refuting, since when humans argue, they obviously assume for themselves that they have right reason which allow them to do so, as well as that their interlocutor has right reason, which is why there is mutual understanding. Epicurus was convinced that humans cannot discard themselves as agents and at the same time be practically consistent with this claim of themselves. How we evolve in life does not depend on our initial state, as long as we have logic and we can bear in mind what is best for us and change ourselves; nor is it predetermined by the external environment, since how we react to it depends on our beliefs as well. After all, arguing against this position already presupposes its truth. The central question in *On Nature* 34.26-30 is whether Epicurus believed that the *πρόληψις* (*προειλ[η]φότες*) we have of being agents may go hand in hand with reductionism or determinism (ibid.: 165-7).

In *On Nature* 34.21-2 Epicurus referred to the psychological development. Following O'Keefe, it is worth dwelling on the term "*ἀπογεγεννημένα*", which is a participle of the passive voice of the verb *ἀπογεννᾶν*, which means "to produce". These products are praised or criticized and are responsible for human actions and behaviours. In addition, the excerpt refers to the original nature (*ἡ ἐξ ἀρχῆς φύσις*), which is the original state of a human, who, as described here, fails to overcome it (ibid.: 172-3). Hence for the products, Epicurus recognized that we could distinguish them from the atoms that make them up in a *τρόπον διαληπτικόν*, which at the same time does not mean that our development is not atomic (ibid.: 175).[31]

Parallel to *On Nature* 34.21-2 and 34.26-30, *DRN* 3.320-2 could be used, where Lucretius addressed the question of whether there can be moral improvement. Specifically, the Latin philosopher used the word "*natura*" in the plural, which is the corresponding term of Greek "*φύσις*", in order to refer to the congenital predispositions that humans can overcome through education and training. In a previous passage, in *DRN* 3.314-5, the plural of *natura* is used, as

[31] See also, Purinton 1996, 155-68.

well, to describe the various natures and habits of humans that make them different. These passages convince us that, where Epicurus used the plural of *φύσις*, he referred to our innate predispositions. Thus, Epicurus claimed that the product from the moment it acquires logic, i.e., a cause out of itself, it can reform even our original physical state (our "first natures"). As far as logic is concerned, it is real, causally efficacious and predicable to souls, not to individual atoms. What is being attempted to demonstrate in these passages, is not an anti-deterministic or an anti-reductionist position, but a devotion to logic, which distinguishes us from wild animals and allows us to shape our own character. Of course, not all people are able to reshape their original state and improve their character. Nevertheless, we blame these people for it, while we do not blame the wild animals, because the latter have no logic and cannot reflect on their character and behaviour, in order to try to change them. Thus, the products can be causally effective and cause changes in the way the atoms move. Specifically, the mind, at some stage of its development, acquires the ability to receive information from the external environment and to respond to them. Having this ability, the mind goes beyond its original atomic state and affects the atomic motion, without this meaning that there is a non-atomic causation; much more, the mind is real, it has causal efficacy even within reductionist materialism (ibid.: 178-9).

The following sentence, in *On Nature* 34.21-2, "*For the nature of their atoms has contributed nothing to some of their behaviour, and degrees of behaviour and character, but it is their developments which themselves possess all or most of the responsibility for certain things.*" could explain why two people, even though they have the same physical predisposition, react differently to environmental influences and evolve differently. The human character is malleable and adaptable, which explains why we blame an irritable person for their inappropriate behaviour, but not an angry lion –because they can change their hot temper. Of course, our actions are not completely predetermined by our surroundings, since the way we react to the information we receive from outside depends on our beliefs. Therefore, neither our original nature nor our environmental influences are sufficient to explain why we evolve in one way or another. We cannot explain why some evolved the way they did based on the internal properties of atoms, since these properties (e.g. shape, weight) cannot provide a satisfactory answer as to why a person has managed to control and overcome anger, while another does not. We can, however, explain these differences by stating that atoms create products which are atomic groupings and compositions that are responsible for the fact that some people develop certain potentialities while others do not (ibid.: 179-82).

As for the phrase, in *On Nature* 34.21-2, "*But many (developments) naturally capable of achieving these and those results fail to achieve them, because of themselves, not because of one and the same responsibility of the atoms and of themselves.*", claiming that products have a cause, is like saying that based on them - and not on the atoms of our soul - we can explain why people develop psychologically as they develop, since *αἰτία* can mean not only the cause, but also the explanation of something. In addition, the fact that something has a cause for something can mean that it is responsible for it. Thus, Epicurus intended to show that products are responsible for the way people evolve and, therefore, when we praise or blame others for their character and behaviour, we are essentially praising or blaming the products of the soul's atoms (ibid.: 182-4). As stated by O 'Keefe, what Epicurean theory declares is that we are responsible agents precisely because we are rational beings (O'Keefe 2005: 123). In brief, the role of the swerve in Epicurean theory is to solve two problems: that of explaining atomic collisions; and that of the probability of the future, since the swerve plays no role in shaping the character, in the formation of *voluntas* and in the implementation of decisions, but it ensures that the future may remain open (ibid.: 149-50).[32]

Lucretius' description of *voluntas* in *DRN* 2.251-93 and of voluntary action in 4.877-96, shows the kind of freedom Epicurus proposed in order to confront determinism. From Lucretius' modus tollens argument, O'Keefe believed that we cannot adequately establish that the reason that the swerves are a necessary condition for *voluntas* is because *voluntas* is caused by them. In addition, in *DRN* 2.251-7 it is pointed out that the swerve abolishes fate by breaking the causal chain, that would otherwise extend infinitely past, not because it is the very beginning of the cause. In other words, the real obstacle to our freedom would be the infinite number of backward causes that the swerves break, although the swerves are not the direct cause of *voluntas*. After all, what guides us to actions that respond to our desire for pleasure is the mind, not the swerves or intentions. Thus, such acts are not entirely accidental and coincidental; they simply do not appear at a predetermined time or place. In this light, what we are about to do is not prescribed by eternity, since this predetermination does not go hand in hand with the mind moving as it wishes (O'Keefe 2005: 26-31).[33]

In *DRN* 2.251-93, Lucretius distinguished voluntary action, whereby the mind is moved by its desire for pleasure, by the predetermined act, which is caused by external factors, such as destiny and external impacts. In conclusion, in this passage, what the philosopher established

[32] See also, O'Keefe 2009, 142-57.
[33] For a critical view of O'Keefe's interpretation, see Atherton 2007, 192-230.

is that the swerve is the necessary condition for *libera voluntas* to exist. And thus, the swerve will be created either before or at the same time with *libera voluntas* for *libera voluntas* to occur (ibid.: 31-2). In the following verses of *DRN* 2.261-83, Lucretius elaborated on the second premise of his argument that *voluntas* does exist. In order to establish the existence of *voluntas*, Lucretius focused on monitoring animal behaviour with two examples, illustrating that animals have an intrinsic capacity to enable them to act (Of course, humans can be described as agents, something we cannot easily claim for animals like horses.). In fact, this ability distinguishes them from the objects and organisms of the natural world, which passively receive external blows. The inner source of voluntary action lies in the animal's mind, which is located in its chest (ibid.: 33).

With reference to the example of horses, the movement from an internal source is revealed, because of the delay between the time the gates open and the horse starting to run. So, since the horse's mind needs some time to decide to move the horse's entire body, it is revealed that there is some kind of movement that starts from the mind. It seems, then, that the kind of freedom that the swerve guarantees is not two-sided freedom, i.e. one can freely choose between two modes of action. On the contrary, Lucretius seemed to describe the free will in animals since the body obeys the desire of the mind. After all, the horses in the example do not doubt whether or not they will get out of the gates. *Voluntas*, duly, enables the animals to be effective agents and to move in the way they desire. It seems, that there is an analogy between collisions, weight, and the swerve, which are the three causes of atomic motion, and the three kinds of physical motion (i.e., one is caused by the influence of an external force, another which results from internal necessity, and another due to *voluntas*). At the same time, just as weight is the factor that prevents all atoms from moving due to blows and external forces, so does the swerve prevent mental movements from being provoked by internal necessity. Since nothing can start from scratch, it follows that there must be some kind of motion - the swerve - responsible for *voluntas*. (ibid.: 33-5).[34]

In keeping with the traditional interpretation of the swerve by Bailey, forced movement is caused by atomic collisions, internally forced movement is caused by atomic weight, and free movement is caused by the atomic swerve. The problem that arises is that Lucretius did not further explain what he meant by saying "inner necessity" and the mechanism by which the swerve prevents it. This kind of freedom does not seem to match Epicurean ethics and

[34] Cf. Conway 1981, 81-9.

psychology, while ensuring that our character is something that depends on us and is controlled by us, is something that Epicureans would seek to preserve. The analogies cited by Lucretius between different causes of atomic motion and different types of body motion should be understood in a more abstract way. After all, forced movement is not only caused by collisions of external bodies, but also by the weight of their atoms. In this light, the explanation of the movement of animals also involves the weight of their atoms, their shape, the previous paths and collisions between them and other atoms. Therefore, what Lucretius analysed seems to be obscure as to whether the voluntary motion is directly caused by the swerves of the atoms (ibid.: 36-7).

In *DRN* 4.877-96, Lucretius described how we can motivate our body members and how *voluntas* works. It is worth noting two things: first, that the philosopher in this excerpt did not mention the swerve; and second, that *voluntas* seems to be caused by the reception of images by the *animus*. Thereupon, the philosopher, analysing the way in which the voluntary motion takes place at the atomic level, pointed out that atomic *simulacra* are presented and activate the *animus*, which in turn mobilises the will. If the swerves played a direct role in Epicurean theory of motion, Lucretius should have logically mentioned them in this excerpt. This omission provides an evidence that reinforces the above claim. In short, *voluntas*, which is the source of voluntary action, is not the same as the swerve and the swerve is not used in every action by *voluntas*. And hence, in this particular verse, a mechanistic explanation of the action is suggested, since the action arises mechanically and automatically from a stimulus entering the human body and from the state of the soul. Of course, this evidence is *prima facie*, as Lucretius did not explicitly state that the swerve does not play a role in free action. The above quotation allows another interpretation: to consider that *voluntas* follows the time of the impact of the images on the *animus*, but this impact is not the cause of its creation; rather, *voluntas* arises from an indeterministic atomic swerve in *animus*, whose existence in this fragment is silenced by the philosopher (but this interpretation does not seem to apply) (ibid.: 38-9).

In *DRN* 2.218-42, Lucretius used a modus tollens argument, going from the obvious (*ἐναργές*) to the non-obvious (*ἄδηλον*). The argument is as follows: if the atoms did not have the swerves, then they would not collide and thus the macroscopic bodies would not emerge. There are blows and macroscopic bodies. So, the atoms have the swerves. As per Epicurean theory of motion, atoms have a natural downward motion with uniform and constant velocity. Thus, the only way to start blows between atoms is by escaping the atoms from their usual orbit and colliding with their neighboring atoms (ibid.: 112-3).

Lucretius stated in *DRN* 2.216-24 and 2.251-93, that the swerve of atoms is necessary in Epicurean theory of motion, because on the one hand there are atomic collisions and consequently the bodies that are visible to us at the macroscopic level; and on the other hand, the swerve is a mound against fate and ensures our freedom (O'Keefe 1996: 305). In more detail, in verses 2.216-24, the philosopher formulated a brief ontological argument for the swerve. Initially, he concluded that when atoms move in a downward direction due to their weight in the void, in indefinite moments and times, deviations occur. Then, it seems that Lucretius responded to a reasonable objection that, i.e. there could be atomic collisions without the need for the atoms to collide, since each of them has a different weight and so the heavier ones could move faster. The philosopher, however, hastened to point out that the perfect void never resists, nowhere and in no way, because nature requires it to constantly leave the road open. Therefore, all bodies, even if they have different weights, must move at the same velocity in the void (ibid.: 307).

In the following verses 2.225-42, Lucretius responded to a possible objection. In particular, someone could suggest that one atom could pass another, even if their natural motion is in the same direction. The only answer to this objection and the only way to start the chain of collisions, since the natural motion of the atoms in Epicurean philosophy is the downward at the same speed, is at least one atom to escape from its usual motion and collide with neighboring atoms. But in this case, other objections may arise: Why should there be an atom which is the beginning of the collisions, and why should there not be a series of collisions that extend back in time indefinitely? After all, in accordance with Epicureans, the universe is infinite spatially and temporally, and atoms always move, so there is no need for an initial temporal cause for their motion to start. Thus, we could conclude that while atomic motion does not require a temporal cause, collisions do. Such a conclusion, however, could not have been adopted by Epicurus. After all, Democritus, who along with Leucippus, is one of the first atomists of antiquity, did not consider it necessary that there should be a starting point for blows as mentioned before, but that they extend backwards indefinitely (ibid.: 307-8).

Moreover, in *Letter to Herodotus* 43-4, where atomic motion is described, nowhere the swerves are reported or their function as the beginning of atomic collisions. Specifically, before the phrase "*ἀρχή δέ τούτων οὐκ ἔστιν*" the philosopher specified, that there are two kinds of atomic motion: either the atoms move eternally at equal distances from each other; or they pulsate on the spot, if they happen to be surrounded by other atoms. The statement that atoms move continuously forever obviously includes atomic collisions (which are described later in the same

passage) as well as the natural downward motion of atoms in the void. Nowhere is any beginning of the collisions brought up and so these collisions happen ever since (ibid.: 309-10).

4.5 Susanne Bobzien

Bobzien developed her own analysis and interpretation of the problem of free will. First, she highlighted that the determinism that Epicurus' theory is opposed to is the causal determinism, according to which each phenomenon can be understood as a result of a completely determined set of successive causes. On the question of freedom, Bobzien indicated that Epicurus distinguished three types of freedom: “the freedom of decision”, that is, the freedom to do or not to do an action; “the freedom of choice”, that is the freedom one has to choose between doing or not doing an action; and “the freedom of will”, that is, the freedom to will to do something and not to do something (“two-sided freedom of the will”). Thus, Epicurus introduced an indeterministic conception of freedom of decision, freedom of choice, and two-sided freedom of will, since agents are free and undetermined by external and internal causal factors (Bobzien 2000: 288-9).

Such an interpretation presupposes that there is a gap in the causal chain before or at the same time while making a decision or choice that allows for an impulsive action; and therefore every human decision or choice is linked to causal indeterminism. But if determinism is true, it means that every decision and choice of an agent between different courses of action is predetermined by previous causes, i.e. that every decision or choice is part of a continuous causal chain. In line with the above, it seems as if determinism and free will are incompatible. Bobzien is convinced that Epicurus had never dealt with the question of free choice or free decision. After all, neither Aristotle, nor the early Stoics, nor other contemporary philosophers of Epicurus had dealt with this issue (ibid.: 289). Bobzien proposed “the whole-person model of agency”. In Epicurus’ theory there is a different conception of moral responsibility, along with a different model of agency. In particular, a person's current character and her spiritual dispositions are not detached from that person as decision maker. In this way, the volition that the person forms, together with the act that she performs, is generally dependent on the disposition of her mind at that very moment (ibid.: 291).

In this interpretative context, the moral responsibility for performing an action, is not connected with the causal undeterminedness of the agent's decision; rather, it is based on the fact that the

performance of the action depends on the current disposition of the individual's mind in general (see also). Bobzien proposed the term “autonomy” of the agent, since she maintained that the agent causes the action and is not coerced or motivated by anything else. Therefore, this concept of moral responsibility is not determined by the freedom of choice or decision, but on the autonomy of the agent. In the whole-person model of agency, agents can influence their actions and their behaviours indirectly, that is, by altering the basis of their actions, their mental dispositions. In this way, there can be no indeterministic freedom of decision. Furthermore, in this model of agency, everything, including human actions, is necessitated by something other than the agent. Thus, the main difficulty arising from a deterministic hypothesis is how agents can continue to regard themselves as causally and consequently morally responsible for their actions. It is emphasized that Epicurus neither dealt with an independent-decision-faculty model of agency, nor with a theory of moral responsibility based on freedom to decide otherwise; on the contrary, Epicurus dealt with the whole-person model of agency, as well as with the theory of moral responsibility based on the idea of agent autonomy. In short, the problem that concerned the philosopher was that of necessitation and agent autonomy (ibid.: 292).

Moreover, Bobzien mentioned the concept *παρ' ἡμᾶς*, to which Epicurus referred to in his *Letter to Menoeceus* 133-4 and his *On Nature* 25 and proposed two interpretations: “the potestative two-sided” and “the causative one-sided” (ibid.: 293). Based on the first interpretation, it is assumed that a verb of being goes with the phrase “something is *παρ' ἡμᾶς*”. An action, then, that it is said to be *παρ' ἡμᾶς* (for example walking), it is *παρ' ἡμᾶς* whether we do it or not; this means that the category of things that are *παρ' ἡμᾶς* includes fifty percent of the unrealized possibilities. In addition, Bobzien explained that “potestative” means that we have some power to do or not to do actions that are considered *παρ' ἡμᾶς*. So, a good translation of *παρ' ἡμᾶς* would be “up to us”. This two-sided potestative approach of *παρ' ἡμᾶς*, therefore, requires neither determinism nor indeterminism. As to the one-sided causative interpretation of *παρ' ἡμᾶς*, it presupposes a verb of happening or becoming (i.e. something happens or comes to be *παρ' ἡμᾶς*) and so a proper translation of *παρ' ἡμᾶς* would be “because of us” or “due to us”. Specifically, the phrase “one-sided” means that if an action happens *παρ' ἡμᾶς*, then its opposite does not happen or come to be *παρ' ἡμᾶς*. At the same time, this phrase expresses precisely who has the causal responsibility for the action. Thus, the sentence “the action happens *παρ' ἡμᾶς*” can be said otherwise: “we are the cause of our action”; in other words, it points out who is causally responsible for an event and does not entail the possibility of free choice. The one-

sided causative *παρ' ἡμᾶς* can be applied to both an indeterministic and a deterministic theory (ibid.: 294-5).

According to Bobzien, in Epicurus' works the phrase *παρ' ἡμᾶς* was perceived primarily like one-sided and causative, since in Epicurean texts the phrase is accompanied by the verb *γίγνεσθαι* and not by the verb *εἶναι* (see also). In support of this position, Bobzien quoted an excerpt from Epicurus' *On Nature* 25, in which she stressed that our beliefs cannot decide anything. Since they are specific beliefs that we actually have, if something depends on them, then we can say that they determine that we develop one way and not the other; not whether we develop one way or the other (ibid.: 297). The question raised next by Epicurus is whether we are ultimately morally responsible for our bad behaviour, given that there is a correlating badness in our natural formation. Epicurus' answer to this question was that we cannot be held responsible if we act through our natural predisposition; but if, while we evolve, we are the cause of our bad behaviours, then one can vituperate us morally, even though our actions are in agreement with our original constitution. Thusly, in *On Nature* 25, the question which Epicurus raised could be summarized as follows: Who or what is causally responsible for our behaviours and attitudes (ibid.: 298)?

The answer of Epicurus' opponents to this question was that everything is caused by necessity, which is universal (*ἡ κατὰ τὸ αὐτόματον ἀνάγκη*), and that everything is necessary. This mechanical necessity of atomists is not a vague divine power, but is further analysed in causal factors. Therefore, in terms of human behaviour, it can be broken down into two causal factors: our original physical constitution, together with the mechanical external necessity surrounding and affecting us. In short, they believed that our behaviour and our actions are the result of the necessitating hereditary predisposition and exogenous environmental factors (ibid.: 299).

On the contrary, Epicurus acknowledged that some events are necessary, but indicated that we ourselves are the causes of our actions which are not necessary. After all, he believed that the same action cannot be caused both by necessity and by us, since he perceived compulsion as necessity. Thus, in the central question of who or what is the cause or the moral responsible for human actions, the philosopher proposed two possible answers: necessity and us ourselves. Hence, Bobzien argued that Epicurus did not raise the question of free choice or free decision, but rather whether we as agents or the necessity cause our actions (ibid.: 299-300). Besides, when some evaluate morally the actions of a person, they indirectly assign causal responsibility to that person for that action (so, there is no question of free decision or free choice) (ibid.: 301).

On the issue of moral responsibility, Epicurus presumed that we blame each other or try to conform someone, because we just believe that the cause of our actions lies in us; and when we consider that some are causally responsible for an action, it means that they are responsible for it. Afterwards, Epicurus pointed out that we have preconceptions that we are causally responsible for our actions, i.e. that they derive from us. And of course, this preconception that we have is not about whether we can act or decide otherwise, but whether we ourselves, and not another factor, are causally responsible for our actions (ibid.: 302-3).

In the opinion of Bobzien, the views of Epicurus in *On Nature* 25 can be summarized thusly: human actions are not necessary, they do not happen by force (*βίᾳ*). On the contrary, the agents have an impulse (*ὅρμημα*) they want to manifest. Impulse or desire (*ἐπιθυμία*) probably correspond to the term "*voluptas*" that we find in Lucretius' *DRN*. Physically, impulses are motions in agents' mind that contribute (*συνεργόν*) to the action. Moreover, in *On Nature* 25 Epicurus emphasized that the philosophers, who claim that everything happens due to necessity, contradict themselves when they act. The philosopher's main concern was to reject the view that all actions are necessitated, in the sense that they are caused by something other than us. For Epicurus, a human behaviour is manifested by necessity when one is forced to behave in that way. On the contrary, if one's behaviour comes from an impulse to act, which arises from one's beliefs and desires towards an external stimulus, then one is not forced into that action (freedom to do otherwise is not involved in this case) (ibid.: 304-6).

As for the role of the swerve, it makes voluntary action possible by preventing the intrinsic necessity of particular mental states and movements, without undermining the explanation of the order and regularity of the world on the basis of atoms and the void.[35] The frequency of this third motion is, of course, limited, since on a daily basis the world seems to be in order. The swerves that occur in the mind do not cause chaos, since the mind is a relatively stable atomic structure, with a large number of potentials (*σπέρματα*) (ibid.: 331-3). Humans become morally responsible and the causes of their actions when they change their dispositions by developing their own thoughts and value criteria. Therefore, they are able to revise earlier judgments or desires that they had adopted on account of inheritance and environmental impact, in this way also revising what they consider to be pleasant. In conclusion, in addition to natural downward atomic motions, Epicurus also introduced swerving motions, i.e. those motions that are not necessary. So, adult humans can be considered like the causes and ethical agents of their actions,

[35] Cf. Wendlandt, Baltzly 2004, 41-71.

in so far as they influence the formation of their character through their logic (ibid.: 335). Moral responsibility requires the absence of coercion and the possibility of agent's autonomy, since through their own beliefs they can contribute to the formation of behavioural dispositions (ibid.: 337).

Bobzien's interpretation of Cicero's work, *On Fate* 23, focused on the contrast that the Latin philosopher adverted between the internal compulsion by the atoms and the freedom from this compulsion. Specifically, while the swerves arise in the human mind, our intellectual dispositions are not the effects of atomic compulsion; contrarily, they are free. Since the swerves prevent the necessity of our mental predisposition, then neither our mental development nor its volitional movements arise by force or necessity. Cicero seemed to realize that Epicurus associated the swerves with human mental predispositions, rather than with all the acts of volition (ibid.: 321-2).

Analysing Lucretius' *DRN* 2.251-93 Bobzien mentioned that despite of the fact that Epicurus considered the swerve to be a prerequisite for the existence of volition, nowhere in his text did Lucretius state how the swerve is required for volition. The term "*voluntas*" reported in the Latin text can be used for both the act and the capacity of volition. Besides, the capacity of volition is the ability of humans to form volitions by responding to an external stimulus, which is in accordance with their desires and beliefs (ibid.: 307-8). As for the term "*libera voluntas*", this is pleonastic, since an act of volition is free (*libera*) when it is not forced by fate, necessity or our internal formation. At the same time, volitional motion is uncaused, along with a motion that originate from the mind. In particular, the mind moves, causing the movement of the soul, and then the movement diffuses throughout the body. Lucretius, in this way, emphasized that the body moves appropriate to the desire of the mind (*studium mentis*) (ibid.: 311). In *DRN* 2.284-7, Lucretius used the term "*potestas*", which can mean a predisposition, a capacity, or an energy, a power. We do not have this power all the time, except for as long as the volition lasts. Previously, in 2.279-82, he declared that there is something in our chest, which is the power of having volitions, which makes our bodies move. So, it is a capacity that needs the swerve to activate. In addition, in verses 2.288-93, the philosopher claimed that the weight of the mind confirms that the mind's movements are not completely forced by external factors. Again, however, the weight of the mind is not enough to prevent mental movements from being forced by internal factors (ibid.: 314-5).

It should be noted that a person's volition to act is predetermined by the general mental state in the present. Therefore, decision-making is something like a function of the mind when deciding.

The inner power of the mind is temporarily separated from the person's current total mental state and, hence, necessity is concerned with the development of the mind, not its decision-making. In addition, the inner necessity of the mind corresponds to the mind atoms. What makes people different from each other is precisely the structure and composition of their atoms. This atomic structure and composition, thus, forms the mental dispositions of a person and determines which of the impinging images the mind acts upon, and which not. Yet, the swerves can lead to a new structure of these atoms, either by the addition or by the removal of some atoms, so that a partial change of the atomic structure may occur (ibid.: 317-8). Because of the swerves the volitional movements of the mind are not perpetually predetermined. Besides, it is in the nature of atoms to swerve, and so it is in the nature of the human mind to have volitions; and as the atoms swerve from their downward course, so do humans, with their volitions, swerve and violate their hereditary development (ibid.: 320).

It results that both Epicurus and Lucretius were concerned with the intrinsic necessity of developing the mind. The fact that a person develops a soul and that the soul has a predisposition and movement of a certain size is necessary; the specific qualities, though, of the soul and its particular developments, while it evolves through time, are not intrinsically necessitated. And since changes in our souls are not necessary, we ourselves are causally responsible for them. That is to say, we ourselves are the causes of our intellectual tendencies when we receive the proper moral education and use our reason to guide our behaviour. With meditation and effort, we can shape our character and ergo the atomic structure of our mind. In addition, we can gain beliefs that are different from those we adopted and developed in line with our original composition. These new beliefs are transmitted to the original disposition of the psyche and as they become a part of it, the general disposition of the psyche changes slightly (ibid.: 323-6).

5. Concluding remarks

Epicurus adopted Democritus' atomic theory, but also differed from it. An innovation in relation to Democritean atomism is the swerve, which is an inconsistency in atomic motion, and which enables living beings to act freely - thus having moral implications.

To sum things up, Furley in his work *Two Studies in the Greek Atomists* pointed out that human behaviour and action can generally be predetermined by the original atomic composition of the body, but this does not prevent a swerve from causing a discontinuity in the causal chain. In other words, humans can determine their own actions, which are the result of their beliefs and education; they can evaluate, which of their actions will result in the production of pleasure and which of those will result in pain. Thus, they choose between alternatives for action based on their beliefs and education, so that they can live a life worthy of that of the gods.

Sedley seemed to be on the same interpretive line with Furley, although he provided a more refined analysis of the issue - specifically in his work "Epicurus' Refutation of Determinism" and in his cooperation with Long in their opus *The Hellenistic Philosophers*. According to Sedley, there is a distinction between the characteristics we develop ourselves and the atoms, since living beings who have the ability to self-determine can transcend the disturbed motion of the atoms of the soul. At the same time, Sedley identified a distinction between the atomic and the psychological level of truth, since the mental states as secondary properties can be the causes of the behaviour of the atomic composition of living beings. When it comes to the swerve, this is a natural cause, but not deterministic, which allows the will, which is a non-physical property of the mind to control the mind and consequently the whole body, resulting in behaviours, which escape from the law-like regularity of natural phenomena. In addition, as per Long and Sedley, there is physical causation, which is based on the physical laws that explain the composition of atoms and their motions and psychological causation, that is based on the will. The will is found in the mind and is the possibility to choose between alternatives; it is not contrary to the laws of nature but cannot be adequately explained by them. All in all, the swerve bears on physical causation and its point is to introduce an element of indeterminacy at the atomic or microcosmic level; one's mind is the source of free will at the psychological level.

As far as Asmis' article "Free Action and the Swerve" is concerned, she largely followed the same line of interpretation like Furley, since she believed, as well, that Epicurus was influenced by the Aristotelian atomic motion and that there is an external and an internal necessity in the

mind. Additionally, she maintained that the swerve is the beginning of voluntary motion, which occurs in both humans and animals in general. Asmis was a supporter of the reductionist interpretation of Epicurus' atomic theory, since she believed that everything we perceive on a macroscopic level - including free will - could be reduced to atoms at a microscopic level. As maintained by Asmis, the Epicurean atomic theory does not answer the philosophical question of how this swerving movement becomes free will.

O'Keefe believed that the mind is a real thing composed of atoms; and that although it has properties that are not properties of atoms, yet it can and does have these properties thanks to the atoms, since these are reduced to atomic relations. So, O'Keefe followed a reductionist interpretative line. As for Epicurus' argument in *On Nature* 34.26-30, he considered that it is anti-fatalist and not anti-deterministic, since according, to him causal determinism could include the effectiveness of human desires and actions, which are determined by previous factors in a series of causal events. In addition, he clarified that character and actions depend entirely on us, since we have reason (which is real, causally efficacious and a soul's property but not atomic) and judgment, unlike wild animals. This does not mean, however, that there is a non-atomic causation; the mind and reason are real and causally efficacious even within reductionist materialism. Whilst for the products (*ἀπογεγεννημένα*), they are atomic compositions responsible for the way people evolve. The swerves may break the causal chain of events, but they are *not* the *direct* cause of *voluntas*, because the inner source of voluntary action is the mind. After all, if the swerve played a direct role in atomic theory, Lucretius would have mentioned it in *DRN* 4.877-96, where he described how *voluntas* works. *Voluntas* is the source of voluntary action - not the swerve -, that allows living beings to be effective agents, but does not offer a two-sided freedom, i.e. the ability to choose between alternative actions.

On the other hand, Bobzien considered that Epicurus opposed causal determinism and that he distinguished three kinds of freedom: "the freedom of decision", "the freedom of choice" and "the freedom of will". This distinction is significant, because Epicurus did not ask the question of free decision or free choice but wondered whether humans as agents or necessity are the causes of our actions. In addition, she proposed "the whole-person model of agency", according to which agents influence their actions *indirectly* through their mental predispositions and through their logic; and she maintained that if there is agent autonomy, agents can be assigned moral responsibility. On the concept of *παρ' ἡμᾶς*, which is identified in both *Letter to Menoeceus* 133-4 and *On Nature* 25, Bobzien considered that one-sided and causative interpretation is better suited (provided that the phrase in the text is accompanied by the verb

γίγνεσθαι) and that this interpretation applies to both an indeterministic and a deterministic theory. With regard to the swerve, Lucretius in *DRN* 2.251-93 did not explain how it is required for volition, which is predetermined by the general mental state of human. Decision-making, however, is a specific quality of the soul which is not intrinsically necessitated; it is a mental function at the time of the decision and is, therefore, separated from the general mental state that is subject to necessity. In this light, humans are agents, morally responsible and the causes of their actions and of the way they evolve in general.

In my opinion and according to Epicurus' atomic theory, everything consists of atoms and void and everything is explained on the basis of the movements of atoms and their blows; atoms and their movements are the causes of the creation of the universe, as humans perceive it with their senses. Hence, the Epicurean physical philosophy is materialistic, mechanistic and deterministic, since the cause of the existence of the universe is attributed to material causes - the atoms and their movements in void. The physical theory of Epicurus aims to establish his moral philosophy, according to which humans, by studying the Epicurean doctrines and using their mind (which also consists of atoms and void) and their reason (which is a physical property of the physical mind), can live a life worthy of that of the gods, in absolute serenity. Therefore, the moral philosophy of Epicurus, which is based on his natural philosophy, should be materialistic, mechanistic and deterministic. However, a problem with the moral concept of free will arises, i.e., whether it can exist within the deterministic framework of Epicurean thought. In order to answer the question from where free will arises, as perceived by humans, which makes us agents and morally responsible for our choices and actions (*On Nature* 34.26-30), Epicurus introduced the term "swerve", which, in an indefinite place and time, is a natural indeterminacy in the causal chain of events. This swerve activates the will and leads humans to act despite their genetic predisposition and the influences they receive from the external environment. Of course, Lucretius, with the example of the horses he used in his argument in *DRN* 2.251-93, gave the impression that the will is something that can be detected in other living beings besides humans, too. But can someone claim that animals have free will? What if he wanted to point out that some human actions cannot be explained only on the basis of necessity or fate and therefore there must be a third - equally natural - cause to explain these actions, without free will as it is perceived in modern philosophy? Is this "*παρ' ἡμᾶς*" a natural and deterministic cause of human action? And if there is a will, what kind of will is it? Based on the reflection developed in the previous chapters, it becomes apparent that it is a will that allows humans to make choices between alternative modes of action. Thus, if an animate being can choose between different possibilities of action, this for Epicurus constituted free will. So,

free will is presented as being able to coexist and be compatible with natural determinism, since free will is a property which arises from the natural swerve of atoms. Epicurus did not oppose to causal determinism but to fatalism, as Furley, Sedley, Asmis and O'Keefe rightly maintain, since it seems that the physical composition and movements of atoms can coexist with the freedom of rational beings to choose between alternatives and to act as they wish. In other words, free will can coexist with causal determinism but not with fatalism. At the same time, the philosopher seemed to have advocated reductionism; particularly, that all events, including our moral decisions and actions, can be reduced to atoms and the void at the microscopic level. However, the mechanism by which free will, that seems to work on a transcendental level, is reduced to atoms and their movements remains obscure, i.e., it is not obvious how reductionism (if possible) can coexist with transcendentalism.

6. Bibliography

Primary Sources

Kirk, G. S., Raven, J. E., Schofield, M. (2014). *Οι Προσωκρατικοί Φιλόσοφοι*, D. Kourtovic (trans.), Athens: MIET (National Bank of Greece Cultural Foundation).

Long, A. A., and Sedley, D. N. (1987). *The Hellenistic Philosophers*. 2 vols. Cambridge: Cambridge University Press.

Lucretius (1963). *De Rerum Natura - Oxford Classical Texts*, C. Bailey (ed.), Oxford: Oxford University Press.

von der Mühll, P. (1922). *Epicuri epistulae tres et ratae sententiae a Laertio Diogene servatae*, Leipzig: Teubner,: 3-27.
Retrieved from: http://stephanus.tlg.uci.edu/Iris/Cite?0537:006:2083

Ross, W.D. (1950). *Aristotelis physica*, Oxford: Clarendon Press (repr. 1966 (1st ed. corr.)): 184a10-267b26.
Retrieved from: http://stephanus.tlg.uci.edu/Iris/Cite?0086:031:0

Secondary Literature

Annas, J. (1992). *Hellenistic Philosophy of Mind*, Berkeley: University of California Press.

---. (1993). "Epicurus on Agency" in *Passions and Perceptions: Studies in Hellenistic Philosophy of Mind, Proceedings of the 5th Symposium Hellenisticum*, J. Brunschwig and M. Nussbaum (eds.), Cambridge: Cambridge University Press, 53-71.

Asmis, E. G. (1970). *Epicurus' Theory of Free Will and Its Origins in Aristotle*, Ph. D. diss. Yale University.

---. (1990). "Free Action and the Swerve" in J. Annas (ed.), *Oxford Studies in Ancient Philosophy* 8: 275-91.

Atherton, C. (2007). "Reductionism, Rationality and Responsibility: A Discussion of Tim O'Keefe, *Epicurus on Freedom*" in *Archiv für Geschichte der Philosophie* 89 (2): 192-230.

Bailey, C. (1964). *The Greek Atomist and Epicurus. A Study*, New York: Russell & Russell.

Bobzien, S. (2000). "Did Epicurus Discover the Free Will Problem?" in D. N. Sedley (ed.), *Oxford Studies in Ancient Philosophy* 19: 287-337.

Cole, T. (1967). *Democritus and the sources of Greek anthropology*, Cleveland: Western Reserve University.

Conway, P. (1981). "Epicurus' Theory of Freedom of Action" in *Prudentia* 13, 81-9.

DeWitt, N. W. (1954). *Epicurus and his philosophy*, Minneapolis: University of Minnesota Press.

Frede, M. (2011). *A Free Will. Origins of the Notion in Ancient Thought*, A. A. Long and D. Sedley (eds.), California: California University Press.

Furley, D. J. (1967). *Two Studies in the Greek Atomists*. Princeton: Princeton University Press.

---. (1987). *The Greek cosmologists. The formation of the atomic theory and its earliest critics*. vol. I, Cambridge: Cambridge University Press.

---. (1993). "Democritus and Epicurus on sensible qualities." in J. Brunschwig & M. Craven Nussbaum (eds.), *Passions & Perceptions: Studies in Hellenistic Philosophy of Mind: Proceedings of the Fifth Symposium Hellenisticum*. Cambridge University Press, 72-94.

Ganson, T. (1999). "Democritus against Reducing Sensible Qualities" in *Ancient Philosophy* 19 (2): 201-15.

Graham, D. W. (2008). "Leucippus's Atomism" in P. Curd and D. W. Graham (eds.) *The Oxford Handbook of Presocratic Philosophy*, Oxford: Oxford University Press, 333-52.

Greenblatt, S. (2012). *The Swerve: How the World Became Modern*, New York: W. W. Norton & Company.

Guthrie, W. K. C. (1969). *A History of Greek Philosophy: The Presocratic Tradition from Parmenides to Democritus,* vol. II, Cambridge: Cambridge University Press.

Huby, P. M. (1978). "Epicurus' Attitude to Democritus" in *Phronesis* 23 (1), 80-6.

Jørgen, M. (2012). "Ancient Philosophy and the Doxographical Tradition" in *A Companion to Ancient Philosophy*, M. L. Gill and P. Pellegrin (eds.), New Jersey: Wiley-Blackwell Publishing, 20-33.

Long, A. A. (1986). *Hellenistic Philosophy: Stoics, Epicureans, Sceptics*. California: University of California Press.

Mitsis, P. (1988). "Reason, Responsibility, and the Mechanisms of Freedom" in *Epicurus' Ethical Theory: The Pleasures of Invulnerability*, New York: Cornell University Press.

Morel, P.-M. (2012). "Epicureanism", in M. L. Gill and P. Pellegrin (eds.), *A Companion to Ancient Philosophy*, New Jersey: Wiley-Blackwell Publishing, 486-504.

O'Keefe, T. (1996). "Does Epicurus Need the Swerve as an Archê of Collisions?" in *Phronesis* 41 (3): 305-17.

---. (1997). "The Ontological Status of Sensible Qualities for Democritus and Epicurus" in *Ancient Philosophy* 17: 119-34.

---. (2002). "The Reductionist and Compatibilist Argument of Epicurus' On Nature, Book 25" in *Phronesis* 47 (2): 153-86.

---. (2005). *Epicurus on Freedom*, Cambridge: Cambridge University Press.

---. (2009). "Action and responsibility" in J. Warren (ed.), *The Cambridge Companion to Epicureanism*, Cambridge: Cambridge University Press, 142-57.

---. (2010). *Epicureanism*, London: Routledge Press.

Purinton, J. S. (1996). "Epicurus on the degrees of responsibility of 'things begotten' for their actions: a new reading of *On Nature* XXV" in G. Giannantoni and M. Gigante (eds., *Epicureanismo Greco e Romano: Atti del Congresso Internazionale Napoli, 19-26 maggio 1993*, vol. I. Naples, 155-68.

---. (1999). "Epicurus on 'Free Volition' and the atomic swerve" in *Phronesis* 44 (4): 253-99.

Saunders, D. (1984). "Free Will and the atomic Swerve in Lucretius." in *Symbolae Osloenses* 59, 37-59.

Sedley, D. N. (1983). "Epicurus' Refutation of Determinism." In ΣΥΖΗΤΗΣΙΣ. *Studi sull' epicureismo Greco e romano* (Festschrift for M. Gigante). Bibl. Della Parola del Passato, 16-I. Naples: Macchiaroli, 11-51.

---. (1988). "Epicurean Anti-Reductionism." in J. Barnes and M. Mignucci (eds.), *Matter and Metaphysics*, Naples: Bibliopolis, 295-327.

---. (2007). *Creationism and Its Critics in Antiquity*, California: California University Press.

Taylor, C. C. W. (1999). "The atomists" in A. A. Long (ed.), *The Cambridge Companion to Early Greek Philosophy,* Cambridge: Cambridge University Press, 181-204.

Vamvacas, C. J. (2009). *The Founders of Western Thought – The Presocratics. A diachronic parallelism between Presocratic Thought and Philosophy and the Natural Sciences*, New York: Springer Publishing Company, 209-48.

Vlastos, G. (1975). "Ethics and Physics in Democritus" in R.E. Allen and D. J. Furley (eds.), *Studies in Presocratic Philosophy. The Eleatics and Pluralists*, vol. II, San Jose: Humanities Press, Inc, 381-408.

Wendlandt, L., Baltzly, D. (2004). "Knowing Freedom: Epicurean Philosophy beyond Atomism and the Swerve" in *Phronesis* 49 (1), 41-71.

Zeller, E. (1870). *The Stoics, Epicureans, and Sceptics.*, London: Longmans, Green, and co.

Dictionary

The Cambridge Dictionary of Philosophy (2nd ed.), (1999), Cambridge: Cambridge University Press.

7. Appendix

Lucretius, *De Rerum Natura* I

Tum porro quoniam est extremum quodque cacumen
corporis illius, quod nostri cernere sensus
iam nequeunt, id ni mirum sine partibus extat
et minima constat natura nec fuit umquam
per se secretum neque post hac esse valebit,
alterius quoniamst ipsum pars primaque et una,
inde aliae atque aliae similes ex ordine partes
agmine condenso naturam corporis explent;
quae quoniam per se nequeunt constare, necessest
haerere unde queant nulla ratione revelli.
sunt igitur solida primordia simplicitate,
quae minimis stipata cohaerent partibus arte.
non ex illorum conventu conciliata,
sed magis aeterna pollentia simplicitate,
unde neque avelli quicquam neque deminui iam
concedit natura reservans semina rebus.
Praeterea nisi erit minimum, parvissima quaeque
corpora constabunt ex partibus infinitis,
quippe ubi dimidiae partis pars semper habebit
dimidiam partem nec res praefiniet ulla.
ergo rerum inter summam minimamque quod escit,
nil erit ut distet; nam quamvis funditus omnis
summa sit infinita, tamen, parvissima quae sunt,
ex infinitis constabunt partibus aeque.
quod quoniam ratio reclamat vera negatque
credere posse animum, victus fateare necessest
esse ea quae nullis iam praedita partibus extent
et minima constent natura. quae quoniam sunt,
illa quoque esse tibi solida atque aeterna fatendum.
Denique si minimas in partis cuncta resolvi
cogere consuesset rerum natura creatrix,
iam nihil ex illis eadem reparare valeret
propterea quia, quae nullis sunt partibus aucta,
non possunt ea quae debet genitalis habere
materies, varios conexus pondera plagas
concursus motus, per quas res quaeque geruntur.

Lucretius, *De Rerum Natura* II

Nunc locus est, ut opinor, in his illud quoque rebus
confirmare tibi, nullam rem posse sua vi
corpoream sursum ferri sursumque meare.

ne tibi dent in eo flammarum corpora frudem;
sursus enim versus gignuntur et augmina sumunt
et sursum nitidae fruges arbustaque crescunt,
pondera, quantum in se est, cum deorsum cuncta ferantur.
nec cum subsiliunt ignes ad tecta domorum
et celeri flamma degustant tigna trabesque,
sponte sua facere id sine vi subiecta putandum est.
quod genus e nostro com missus corpore sanguis
emicat exultans alte spargitque cruorem.
nonne vides etiam quanta vi tigna trabesque
respuat umor aquae? nam quo magis ursimus altum
derecta et magna vi multi pressimus aegre,
tam cupide sursum removet magis atque remittit,
plus ut parte foras emergant exiliantque.
nec tamen haec, quantum est in se, dubitamus, opinor,
quin vacuum per inane deorsum cuncta ferantur.
sic igitur debent flammae quoque posse per auras
aeris expressae sursum succedere, quamquam
pondera, quantum in <se> est, deorsum <de>ducere pugnent.
nocturnasque faces caeli sublime volantis
nonne vides longos flammarum ducere tractus
in quas cumque dedit partis natura meatum?
non cadere in terras stellas et sidera cernis?
sol etiam <caeli> de vertice dissipat omnis
ardorem in partis et lumine conserit arva;
in terras igitur quoque solis vergitur ardor.
transversosque volare per imbris fulmina cernis,
nunc hinc nunc illinc abrupti nubibus ignes
concursant; cadit in terras vis flammea volgo.
Illud in his quoque te rebus cognoscere avemus,
corpora cum deorsum rectum per inane feruntur
ponderibus propriis, incerto tempore ferme
incertisque locis spatio depellere paulum,
tantum quod momen mutatum dicere possis.
quod nisi declinare solerent, omnia deorsum
imbris uti guttae caderent per inane profundum
nec foret offensus natus nec plaga creata
principiis; ita nihil umquam natura creasset.
Quod si forte aliquis credit graviora potesse
corpora, quo citius rectum per inane feruntur,
incidere ex supero levioribus atque ita plagas
gignere, quae possint genitalis reddere motus,
avius a vera longe ratione recedit.
nam per aquas quae cumque cadunt atque aera rarum,
haec pro ponderibus casus celerare necessest
propterea quia corpus aquae naturaque tenvis
aeris haud possunt aeque rem quamque morari,

sed citius cedunt gravioribus exsuperata;
at contra nulli de nulla parte neque ullo
tempore inane potest vacuum subsistere rei,
quin, sua quod natura petit, concedere pergat;
omnia qua propter debent per inane quietum
aeque ponderibus non aequis concita ferri.
haud igitur poterunt levioribus incidere umquam
ex supero graviora neque ictus gignere per se,
qui varient motus, per quos natura gerat res.
quare etiam atque etiam paulum inclinare necessest
corpora; nec plus quam minimum, ne fingere motus
obliquos videamur et id res vera refutet.
namque hoc in promptu manifestumque esse videmus,
pondera, quantum in <se> est, non posse obliqua meare,
ex supero cum praecipitant, quod cernere possis;
sed nihil omnino <recta> regione viai
declinare quis est qui possit cernere sese?

***

iam tibi barbaricae vestes Meliboeaque fulgens
purpura Thessalico concharum tacta colore,
aurea pavonum ridenti imbuta lepore
saecla novo rerum superata colore iacerent
et contemptus odor smyrnae mellisque sapores,
et cycnea mele Phoebeaque daedala chordis
carmina consimili ratione oppressa silerent;
namque aliis aliud praestantius exoreretur.
cedere item retro possent in deteriores
omnia sic partis, ut diximus in melioris;
namque aliis aliud retro quoque taetrius esset
naribus auribus atque oculis orisque sapori.
quae quoniam non sunt, <sed> rebus reddita certa
finis utrimque tenet summam, fateare necessest
materiem quoque finitis differe figuris.
denique ab ignibus ad gelidas hiemum usque pruinas
finitumst retroque pari ratione remensumst.
omnis enim calor ac frigus mediique tepores
interutrasque iacent explentes ordine summam.
ergo finita distant ratione creata,
ancipiti quoniam mucroni utrimque notantur,
hinc flammis illinc rigidis infesta pruinis.

Haec eadem ratio naturam animi atque animai
corpoream docet esse: ubi enim propellere membra,
corripere ex somno corpus mutareque uultum
atque hominem totum regere ac uersare uidetur,
quorum nil ieri sine tactu posse uidemus
nec tactum porro sine corpore, nonne fatendumst
corporea natura animum constare animamque?

***

Is tibi nunc animus quali sit corpore et unde
constiterit pergam rationem reddere dictis.
principio esse aio persubtilem atque minutis
perquam corporibus factum constare. id ita esse
hinc licet aduertas animum ut pernoscere possis.
nil adeo ieri celeri ratione uidetur
quam sibi mens ieri proponit et incohat ipsa.
ocius ergo animus quam res se perciet ulla,
ante oculos quorum in promptu natura uidetur.
at quod mobile tanto operest, constare rutundis
perquam seminibus debet perquamque minutis,
momine uti paruo possint impulsa moueri.
namque mouetur aqua et tantillo momine lutat
quippe uolubilibus paruisque creata iguris.
at contra mellis constantior est natura
et pigri latices magis et cunctantior actus:
haeret enim inter se magis omnis materiai
copia, nimirum quia non tam leuibus exstat
corporibus neque tam subtilibus atque rutundis.
namque papaueris aura potest suspensa leuisque
cogere ut ab summo tibi difluat altus aceruus,
at contra lapidum conlectum spicarumque
noenu potest. igitur paruissima corpora proquam
et leuissima sunt, ita mobilitate fruuntur,
at contra quaecumque magis cum pondere magno
asperaque inueniuntur, eo stabilita magis sunt.
nunc igitur quoniam est animi natura reperta
mobilis egregie, perquam constare necessest
corporibus paruis et leuibus atque rutundis.
quae tibi cognita res in multis, o bone, rebus
utilis inuenietur et opportuna cluebit.

***

Nec tamen haec simplex nobis natura putanda est.
tenuis enim quaedam moribundos deserit aura
mixta uapore, uapor porro trahit aera secum.
nec calor est quisquam, cui non sit mixtus et aer:
rara quod eius enim constat natura, necessest
aeris inter eum primordia multa moueri

***

est etiam calor ille animo, quem sumit in ira,
cum feruescit et ex oculis micat acribus ardor.
est et frigida multa comes formidinis aura,
quae ciet horrorem membris et concitat artus.
est etiam quoque pacati status aeris ille,
pectore tranquillo qui it uultuque sereno.
sed calidi plus est illis quibus acria corda
iracundaque mens facile efferuescit in iram.

***

sic hominum genus est: quamuis doctrina politos
constituat pariter quosdam, tamen illa relinquit
naturae cuiusque animi uestigia prima,
nec radicitus euelli mala posse putandumst,
quin procliuius hic iras decurrat ad acris,
ille metu citius paulo temptetur, at ille
tertius accipiat quaedam clementius aequo.
inque aliis rebus multis differre necessest
naturas hominum uarias moresque sequaces,
quorum ego nunc nequeo caecas exponere causas
nec reperire igurarum tot nomina quot sunt
principiis, unde haec oritur uariantia rerum.
illud in his rebus uideo irmare potesse,
usque adeo naturarum uestigia linqui
paruula quae nequeat ratio depellere nobis,
ut nil impediat dignam dis degere uitam.

***

nimirum quia per uenas et uiscera mixtim,
per neruos atque ossa, tenentur corpore ab omni
nec magnis interuallis primordia possunt
libera dissultare, ideo conclusa mouentur
sensiferos motus quos extra corpus in auras
aeris haud possunt post mortem eiecta moueri
propterea quia non simili ratione tenentur.
corpus enim atque animans erit aer, si cohibere
in se animam atque in eos poterit concludere motus
quos ante in neruis et in ipso corpore agebat.

Lucretius, *De Rerum Natura* IV

Nunc qui fiat uti passus proferre queamus,
cum volumus, quareque datum sit membra movere
et quae res tantum hoc oneris protrudere nostri
corporis insuerit, dicam: tu percipe dicta.

dico animo nostro primum simulacra meandi
accidere atque animum pulsare, ut diximus ante.
inde voluntas fit; neque enim facere incipit ullam
rem quisquam, [quam] mens providit quid velit ante.
id quod providet, illius rei constat imago,
ergo animus cum sese ita commovet ut velit ire
inque gredi, ferit extemplo quae in corpore toto
per membra atque artus animai dissita vis est;
et facilest factu, quoniam coniuncta tenetur.
inde ea proporro corpus ferit, atque ita tota
paulatim moles protruditur atque movetur.
praeterea tum rarescit quoque corpus et aër,
scilicet ut debet qui semper mobilis extat,
per patefacta venit penetratque foramina largus,
et dispargitur ad partis ita quasque minutas
corporis. hic igitur rebus fit utrimque duabus,
corpus ut ac navis velis ventoque feratur.

Epicurus, *Letter to Herodotus*

(39) *καὶ εἰ ἐφθείρετο δὲ τὸ ἀφανιζόμενον εἰς τὸ μὴ ὄν, πάντα ἂν ἀπωλώλει τὰ πράγματα, οὐκ ὄντων τῶν εἰς ἃ διελύετο. Καὶ μὴν καὶ τὸ πᾶν ἀεὶ τοιοῦτον ἦν οἷον νῦν ἐστι, καὶ ἀεὶ τοιοῦτον ἔσται. οὐθὲν γάρ ἐστιν εἰς ὃ μεταβαλεῖ. παρὰ γὰρ τὸ πᾶν οὐθέν ἐστιν. ὃ ἂν εἰσελθὸν εἰς αὐτὸ τὴν μεταβολὴν ποιήσαιτο.*
Ἀλλὰ μὴν καὶ (τοῦτο καὶ ἐν τῇ Μεγάλῃ ἐπιτομῇ φησι κατ' ἀρχὴν καὶ ἐν τῇ α Περὶ φύσεως) τὸ πᾶν ἐστι <σώματα καὶ κενόν>· σώματα μὲν γὰρ ὡς ἔστιν, αὐτὴ ἡ αἴσθησις ἐπὶ πάντων μαρτυρεῖ, καθ' ἣν ἀναγκαῖον τὸ ἄδηλον τῷ λογισμῷ
(40) *τεκμαίρεσθαι, ὥσπερ προεῖπον τὸ πρόσθεν· εἰ <δὲ> μὴ ἦν ὃ κενὸν καὶ χώραν καὶ ἀναφῆ φύσιν ὀνομάζομεν, οὐκ ἂν εἶχε τὰ σώματα ὅπου ἦν οὐδὲ δι' οὗ ἐκινεῖτο, καθάπερ φαίνεται κινούμενα, παρὰ δὲ ταῦτα οὐθὲν οὐδ' ἐπινοηθῆναι δύναται οὔτε περιληπτῶς οὔτε ἀναλόγως τοῖς περιληπτοῖς ὡς καθ' ὅλας φύσεις λαμβανόμενα καὶ μὴ ὡς τὰ τούτων συμπτώματα ἢ συμβεβηκότα λεγόμενα.*
Καὶ μὴν καὶ τῶν (τοῦτο καὶ ἐν τῇ πρώτῃ Περὶ φύσεως καὶ τῇ ιδ καὶ ιε καὶ τῇ Μεγάλῃ ἐπιτομῇ) σωμάτων τὰ μέν ἐστι
(41) *συγκρίσεις, τὰ δ' ἐξ ὧν αἱ συγκρίσεις πεποίηνται· ταῦτα δέ ἐστιν ἄτομα καὶ ἀμετάβλητα, εἴπερ μὴ μέλλει πάντα εἰς τὸ μὴ ὂν φθαρήσεσθαι, ἀλλ' ἰσχύοντα ὑπομενεῖν ἐν ταῖς διαλύσεσι τῶν συγκρίσεων πλήρη τὴν φύσιν ὄντα καὶ οὐκ ἔχοντα ὅπῃ ἢ ὅπως διαλυθήσεται. ὥστε τὰς ἀρχὰς ἀτόμους ἀναγκαῖον εἶναι σωμάτων φύσεις.*
Ἀλλὰ μὴν καὶ τὸ πᾶν ἄπειρόν ἐστι. τὸ γὰρ πεπερασμένον ἄκρον ἔχει· τὸ δὲ ἄκρον παρ' ἕτερόν τι θεωρεῖται· ὥστε οὐκ

ἔχον ἄκρον πέρας οὐκ ἔχει· πέρας δὲ οὐκ ἔχον ἄπειρον ἂν εἴη καὶ οὐ πεπερασμένον.
Καὶ μὴν καὶ τῷ πλήθει τῶν σωμάτων ἄπειρόν ἐστι τὸ πᾶν
(42) *καὶ τῷ μεγέθει τοῦ κενοῦ. εἴ τε γὰρ ἦν τὸ κενὸν ἄπειρον, τὰ δὲ σώματα ὡρισμένα, οὐθαμοῦ ἂν ἔμενε τὰ σώματα, ἀλλ' ἐφέρετο κατὰ τὸ ἄπειρον κενὸν διεσπαρμένα, οὐκ ἔχοντα τὰ ὑπερείδοντα καὶ στέλλοντα κατὰ τὰς ἀνακοπάς· εἴ τε τὸ κενὸν ἦν ὡρισμένον, οὐκ ἂν εἶχε τὰ ἄπειρα σώματα ὅπου ἐνέστη*
Πρός τε τούτοις τὰ ἄτομα τῶν σωμάτων καὶ μεστά, ἐξ ὧν καὶ αἱ συγκρίσεις γίνονται καὶ εἰς ἃ διαλύονται, ἀπερίληπτά ἐστι ταῖς διαφοραῖς τῶν σχημάτων· οὐ γὰρ δυνατὸν γενέσθαι τὰς τοσαύτας διαφορὰς ἐκ τῶν αὐτῶν σχημάτων περιειλημμένων. Καὶ καθ' ἑκάστην δὲ σχημάτισιν ἁπλῶς ἄπειροί εἰσιν (
αἱ ὅμοιαι, ταῖς δὲ διαφοραῖς οὐχ ἁπλῶς ἄπειροι ἀλλὰ μόνον
(43) *ἀπερίληπτοι, (οὐδὲ γάρ φησιν ἐνδοτέρω εἰς ἄπειρον τὴν τομὴν τυγχάνειν. λέγει δέ, ἐπειδὴ αἱ ποιότητες μεταβάλλονται), εἰ μέλλει τις μὴ καὶ τοῖς μεγέθεσιν ἁπλῶς εἰς ἄπειρον αὐτὰς ἐκβάλλειν.*
Κινοῦνταί τε συνεχῶς αἱ ἄτομοι (φησὶ δὲ ἐνδοτέρω καὶ ἰσο-
ταχῶς αὐτὰς κινεῖσθαι τοῦ κενοῦ τὴν εἶξιν ὁμοίαν παρεχομένου καὶ τῇ κουφοτάτῃ καὶ τῇ βαρυτάτῃ) τὸν αἰῶνα, καὶ αἱ μὲν εἰς μακρὰν ἀπ' ἀλλήλων διιστάμεναι, αἱ δὲ αὐτοῦ τὸν παλμὸν ἴσχουσαι, ὅταν τύχωσι τῇ περιπλοκῇ κεκλειμέναι ἢ στεγαζό-
(44) *μεναι παρὰ τῶν πλεκτικῶν. ἥ τε γὰρ τοῦ κενοῦ φύσις ἡ διορίζουσα ἑκάστην αὐτὴν τοῦτο παρασκευάζει, τὴν ὑπέρεισιν οὐχ οἵα τε οὖσα ποιεῖσθαι· ἥ τε στερεότης ἡ ὑπάρχουσα αὐταῖς κατὰ τὴν σύγκρουσιν τὸν ἀποπαλμὸν ποιεῖ, ἐφ' ὁπόσον ἂν ἡ περιπλοκὴ τὴν ἀποκατάστασιν ἐκ τῆς συγκρούσεως διδῷ.*
ἀρχὴ δὲ τούτων οὐκ ἔστιν, ἀϊδίων τῶν ἀτόμων οὐσῶν καὶ τοῦ κενοῦ. (φησὶ δ' ἐνδοτέρω μηδὲ ποιότητά τινα περὶ τὰς ἀτόμους εἶναι πλὴν σχήματος καὶ μεγέθους καὶ βάρους· τὸ δὲ χρῶμα παρὰ τὴν θέσιν τῶν ἀτόμων ἀλλάττεσθαι ἐν ταῖς Δώδεκα στοιχειώσεσί φησι. πᾶν τε μέγεθος μὴ εἶναι περὶ αὐτάς· οὐδέποτε
γοῦν ἄτομος ὤφθη αἰσθήσει.)

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(59) *ἐν τῇ ἀτόμῳ ἐλάχιστον κεχρῆσθαι· μικρότητι γὰρ ἐκεῖνο δῆλον ὡς διαφέρει τοῦ κατὰ τὴν αἴσθησιν θεωρουμένου, ἀναλογίᾳ δὲ τῇ αὐτῇ κέχρηται. ἐπεί περ καὶ ὅτι μέγεθος ἔχει ἡ ἄτομος, κατὰ τὴν ἐνταῦθα ἀναλογίαν κατηγορήσαμεν, μικρόν τι μόνον μακρὰν ἐκβαλόντες. ἔτι τε τὰ ἐλάχιστα καὶ ἀμερῆ πέρατα δεῖ*
νομίζειν τῶν μηκῶν τὸ καταμέτρημα ἐξ αὐτῶν πρώτων τοῖς μείζοσι καὶ ἐλάττοσι παρασκευάζοντα τῇ διὰ λόγου θεωρίᾳ ἐπὶ τῶν ἀοράτων. ἡ γὰρ κοινότης ἡ ὑπάρχουσα αὐτοῖς πρὸς τὰ †ἀμετάβολα ἱκανὴ τὸ μέχρι τούτου συντελέσαι, συμφόρησιν δὲ ἐκ τούτων κίνησιν ἐχόντων οὐχ οἷόν τε γίνεσθαι.

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(61) *Καὶ μὴν καὶ ἰσοταχεῖς ἀναγκαῖον τὰς ἀτόμους εἶναι, ὅταν*

διὰ τοῦ κενοῦ εἰσφέρωνται μηθενὸς ἀντικόπτοντος. οὔτε γὰρ τὰ βαρέα θᾶττον οἰσθήσεται τῶν μικρῶν καὶ κούφων, ὅταν γε δὴ μηδὲν ἀπαντᾷ αὐτοῖς· οὔτε τὰ μικρὰ τῶν μεγάλων, πάντα πόρον σύμμετρον ἔχοντα, ὅταν μηθὲν μηδὲ ἐκείνοις (5) *ἀντικόπτῃ· οὔθ' ἡ ἄνω οὔθ' ἡ εἰς τὸ πλάγιον διὰ τῶν κρούσεων φορά, οὔθ' ἡ κάτω διὰ τῶν ἰδίων βαρῶν. ἐφ' ὁπόσον γὰρ ἂν κατίσχῃ ἑκάτερον, ἐπὶ τοσοῦτον ἅμα νοήματι τὴν φορὰν σχήσει, ἕως ἀντικόψῃ ἢ ἔξωθεν ἢ ἐκ τοῦ ἰδίου βάρους πρὸς*
(62) *τὴν τοῦ πλήξαντος δύναμιν. Ἀλλὰ μὴν καὶ κατὰ τὰς συγκρίσεις θάττων ἑτέρα ἑτέρας ῥηθήσεται τῶν ἀτόμων ἰσοταχῶν οὐσῶν, τῷ ἐφ' ἕνα τόπον φέρεσθαι τὰς ἐν τοῖς ἀθροίσμασιν ἀτόμους [καὶ] κατὰ τὸν ἐλάχιστον συνεχῆ χρόνον, εἰ <καὶ> μὴ ἐφ' ἕνα κατὰ τοὺς λόγῳ θεωρητοὺς χρόνους· ἀλλὰ πυκνὸν* (5) *ἀντικόπτουσιν, ἕως ἂν ὑπὸ τὴν αἴσθησιν τὸ συνεχὲς τῆς φορᾶς γίνηται. τὸ γὰρ προσδοξαζόμενον περὶ τοῦ ἀοράτου, ὡς ἄρα καὶ οἱ διὰ λόγου θεωρητοὶ χρόνοι τὸ συνεχὲς τῆς φορᾶς ἔξουσιν, οὐκ ἀληθές ἐστιν ἐπὶ τῶν τοιούτων· ἐπεὶ τό γε θεωρούμενον πᾶν ἢ κατ' ἐπιβολὴν λαμβανόμενον τῇ διανοίᾳ ἀληθές ἐστι;* (10)
(63) *Μετὰ δὲ ταῦτα δεῖ συνορᾶν ἀναφέροντα ἐπὶ τὰς αἰσθήσεις καὶ τὰ πάθη—οὕτω γὰρ ἡ βεβαιοτάτη πίστις ἔσται—, ὅτι ἡ ψυχὴ σῶμά ἐστι λεπτομερὲς παρ' ὅλον τὸ ἄθροισμα παρεσπαρμένον, προσεμφερέστατον δὲ πνεύματι θερμοῦ τινα κρᾶσιν ἔχοντι καὶ πῇ μὲν τούτῳ προσεμφερές, πῇ δὲ τούτῳ·* (5) *ἔστι δέ τι μέρος πολλὴν παραλλαγὴν εἰληφὸς τῇ λεπτομερείᾳ καὶ αὐτῶν τούτων, συμπαθὲς δὲ τούτῳ μᾶλλον καὶ τῷ λοιπῷ ἀθροίσματι· τοῦτο δὲ πᾶν αἱ δυνάμεις τῆς ψυχῆς δηλοῦσι καὶ τὰ πάθη καὶ αἱ εὐκινησίαι καὶ αἱ διανοήσεις καὶ ὧν στερόμενοι θνῄσκομεν. Καὶ μὴν καὶ ὅτι ἔχει ἡ ψυχὴ τῆς* (10)

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65) *συμπάθειαν καὶ ἐκείνῳ, καθάπερ εἶπον. Διὸ δὴ καὶ ἐνυπάρχουσα ἡ ψυχὴ οὐδέποτε ἄλλου τινὸς μέρους ἀπηλλαγμένου ἀναισθητεῖ ἀλλ' ἃ ἂν καὶ ταύτης ξυναπόληται τοῦ στεγάζοντος λυθέντος εἴθ' ὅλου εἴτε καὶ μέρους τινός, ἐάν περ διαμένῃ, σῴζει τὴν αἴσθησιν. τὸ δὲ λοιπὸν ἄθροισμα διαμένον καὶ* (5) *ὅλον καὶ κατὰ μέρος οὐκ ἔχει τὴν αἴσθησιν ἐκείνου ἀπηλλαγμένου, ὅσον ποτέ ἐστι τὸ συντεῖνον τῶν ἀτόμων πλῆθος εἰς τὴν τῆς ψυχῆς φύσιν. Καὶ μὴν καὶ λυομένου τοῦ ὅλου ἀθροίσματος ἡ ψυχὴ διασπείρεται καὶ οὐκέτι ἔχει τὰς αὐτὰς*
(66) *δυνάμεις οὐδὲ κινεῖται, ὥστε οὐδ' αἴσθησιν κέκτηται. οὐ γὰρ οἷόν τε νοεῖν αὐτὸ αἰσθανόμενον μὴ ἐν τούτῳ τῷ συστήματι καὶ ταῖς κινήσεσι ταύταις χρώμενον, ὅταν τὰ στεγάζοντα καὶ περιέχοντα μὴ τοιαῦτα ᾖ, ἐν οἷς νῦν οὖσα ἔχει ταύτας τὰς κινήσεις. Ἀλλὰ μὴν καὶ τόδε (λέγει ἐν ἄλλοις καὶ ἐξ ἀτόμων* (5) *αὐτὴν συγκεῖσθαι λειοτάτων καὶ στρογγυλωτάτων, πολλῷ τινι διαφερουσῶν τῶν τοῦ πυρός καὶ τὸ μέν τι ἄλογον αὐτῆς, ὃ τῷ λοιπῷ παρεσπάρθαι σώματι·τὸ δὲ λογικὸν ἐν τῷ θώρακι, ὡς δῆλον ἔκ τε τῶν φόβων καὶ τῆς χαρᾶς. ὕπνον τε γίνεσθαι τῶν τῆς ψυχῆς μερῶν τῶν παρ' ὅλην τὴν σύγκρισιν παρεσπαρμένων* (10)

ἐγκατεχομένων ἢ διαφορουμένων, εἶτα συμπιπτόντων τοῖς †ποr-
(67) *γμοῖς. τό τε σπέρμα ἀφ' ὅλων τῶν σωμάτων φέρεσθαι.) γε δεῖ*
προσκατανοεῖν, ὅτι τὸ ἀσώματον λέγομεν κατὰ τὴν πλείστην
ὁμιλίαν τοῦ ὀνόματος ἐπὶ τοῦ καθ' ἑαυτὸ νοηθέντος ἄν·
καθ' ἑαυτὸ δὲ οὐκ ἔστι νοῆσαι τὸ ἀσώματον πλὴν τοῦ κενοῦ.
τὸ δὲ κενὸν οὔτε ποιῆσαι οὔτε παθεῖν δύναται, ἀλλὰ κίνησιν (5)
μόνον δι' ἑαυτοῦ τοῖς σώμασι παρέχεται. ὥστ' οἱ λέγοντες
ἀσώματον εἶναι τὴν ψυχὴν ματαϊζουσιν. οὐθὲν γὰρ ἂν ἐδύ-
νατο ποιεῖν οὔτε πάσχειν, εἰ ἦν τοιαύτη·νῦν δ' ἐναργῶς
ἀμφότερα ταῦτα διαλαμβάνομεν περὶ τὴν ψυχὴν τὰ συμπτώ-
(68) *ματα.*

Aristotle, *Physics* IV.8, 215a 1-13

ἔχει διαφοράν. ἔπειθ' ὅτι πᾶσα κίνησις ἢ βίᾳ ἢ
κατὰ φύσιν. ἀνάγκη δὲ ἅν περ ᾖ <ἡ> βίαιος, εἶναι καὶ τὴν
κατὰ φύσιν (ἡ μὲν γὰρ βίαιος παρὰ φύσιν, ἡ δὲ
παρὰ φύσιν ὑστέρα τῆς κατὰ φύσιν)· ὥστ' εἰ μὴ κατὰ φύ-
σιν ἔστιν ἑκάστῳ τῶν φυσικῶν σωμάτων κίνησις, οὐδὲ τῶν (5)
ἄλλων ἔσται κινήσεων οὐδεμία. ἀλλὰ μὴν φύσει γε πῶς
ἔσται μηδεμιᾶς οὔσης διαφορᾶς κατὰ τὸ κενὸν καὶ τὸ ἄπει-
ρον; ᾗ μὲν γὰρ ἄπειρον, οὐδὲν ἔσται ἄνω οὐδὲ κάτω οὐδὲ
μέσον, ᾗ δὲ κενόν, οὐδὲν διάφορον τὸ ἄνω τοῦ κάτω (ὥσπερ
γὰρ τοῦ μηδενὸς οὐδεμία ἔστι διαφορά, οὕτω καὶ τοῦ κενοῦ· (10)
τὸ γὰρ κενὸν μὴ ὄν τι καὶ στέρησις δοκεῖ εἶναι). ἡ δὲ
φύσει φορὰ διάφορος, ὥστε ἔσται φύσει διάφορα. ἢ οὖν
οὐκ ἔστι φύσει οὐδαμοῦ οὐδενὶ φορά, ἢ εἰ τοῦτ' ἔστιν, οὐκ ἔστι
κενόν.

Aristotle, *Physics* VI.10, 240b 8 *ff.*

Ἀποδεδειγμένων δὲ τούτων λέγομεν ὅτι τὸ ἀμερὲς οὐκ
ἐνδέχεται κινεῖσθαι πλὴν κατὰ συμβεβηκός, οἷον κινουμένου
τοῦ σώματος ἢ τοῦ μεγέθους τῷ ἐνυπάρχειν, καθάπερ (10)
ἂν εἰ τὸ ἐν τῷ πλοίῳ κινοῖτο ὑπὸ τῆς τοῦ πλοίου φορᾶς
ἢ τὸ μέρος τῇ τοῦ ὅλου κινήσει. (ἀμερὲς δὲ λέγω τὸ κατὰ
ποσὸν ἀδιαίρετον.) καὶ γὰρ αἱ τῶν μερῶν κινήσεις ἕτεραί
εἰσι κατ' αὐτά τε τὰ μέρη καὶ κατὰ τὴν τοῦ ὅλου κίνησιν.
ἴδοι δ' ἄν τις ἐπὶ τῆς σφαίρας μάλιστα τὴν διαφοράν· οὐ (15)
γὰρ ταὐτὸν τάχος ἐστὶ τῶν τε πρὸς τῷ κέντρῳ καὶ τῶν
ἐκτὸς καὶ τῆς ὅλης, ὡς οὐ μιᾶς οὔσης κινήσεως. καθάπερ
οὖν εἴπομεν, οὕτω μὲν ἐνδέχεται κινεῖσθαι τὸ ἀμερὲς ὡς ὁ
ἐν τῷ πλοίῳ καθήμενος τοῦ πλοίου θέοντος, καθ' αὑτὸ δ'
οὐκ ἐνδέχεται. μεταβαλλέτω γὰρ ἐκ τοῦ ΑΒ εἰς τὸ ΒΓ, (20)
εἴτ' ἐκ μεγέθους εἰς μέγεθος εἴτ' ἐξ εἴδους εἰς εἶδος εἴτε
κατ' ἀντίφασιν· ὁ δὲ χρόνος ἔστω ἐν ᾧ πρώτῳ μεταβάλλει

ἐφ' οὗ Δ. οὐκοῦν ἀνάγκη αὐτὸ καθ' ὃν μεταβάλλει χρόνον
ἢ ἐν τῷ ΑΒ εἶναι ἢ ἐν τῷ ΒΓ, ἢ τὸ μέν τι αὐτοῦ ἐν
τούτῳ τὸ δ' ἐν θατέρῳ· πᾶν γὰρ τὸ μεταβάλλον οὕτως (25)
εἶχεν. ἐν ἑκατέρῳ μὲν οὖν οὐκ ἔσται τι αὐτοῦ· μεριστὸν γὰρ
ἂν εἴη. ἀλλὰ μὴν οὐδ' ἐν τῷ ΒΓ· μεταβεβληκὸς γὰρ
ἔσται, ὑπόκειται δὲ μεταβάλλειν. λείπεται δὴ αὐτὸ ἐν τῷ
ΑΒ εἶναι, καθ' ὃν μεταβάλλει χρόνον. ἠρεμήσει ἄρα· τὸ
γὰρ ἐν τῷ αὐτῷ εἶναι χρόνον τινὰ ἠρεμεῖν ἦν. ὥστ' οὐκ ἐν- (30)
δέχεται τὸ ἀμερὲς κινεῖσθαι οὐδ' ὅλως μεταβάλλειν· μο-
ναχῶς γὰρ ἂν οὕτως ἦν αὐτοῦ κίνησις, εἰ ὁ χρόνος ἦν ἐκ
τῶν νῦν· αἰεὶ γὰρ ἐν τῷ νῦν κεκινημένον ἂν ἦν καὶ μετα-
(241a) *βεβληκός, ὥστε κινεῖσθαι μὲν μηδέποτε, κεκινῆσθαι δ' ἀεί.*

Cicero, *Academica priora* II, 37, 118

Leucippus plenum et inane: Democritus huic in hoc similis, uberior in ceteris.

Aristotle, *Metaphysics* A 4, 985 b 4

Λεύκιππος δὲ καὶ ὁ ἑταῖρος
αὐτοῦ Δημόκριτος στοιχεῖα μὲν τὸ πλῆρες καὶ τὸ κενὸν εἶναί (5)
φασι, λέγοντες τὸ μὲν ὂν τὸ δὲ μὴ ὄν, τούτων δὲ τὸ μὲν
πλῆρες καὶ στερεὸν τὸ ὄν, τὸ δὲ κενὸν τὸ μὴ ὄν (διὸ
καὶ οὐθὲν μᾶλλον τὸ ὂν τοῦ μὴ ὄντος εἶναί φασιν, ὅτι
οὐδὲ τοῦ κενοῦ τὸ σῶμα), αἴτια δὲ τῶν ὄντων ταῦτα ὡς ὕλην. […]

Aristotle, *On Generation and Corruption* A 8, 326 a 9

καίτοι βαρύτερόν γε κατὰ τὴν ὑπεροχήν φησιν εἶναι Δη-
μόκριτος ἕκαστον τῶν ἀδιαιρέτων.

Aristotle, On Democritus according to Simplicius On Heaven 295, 1 (DK 68 a 37)

1 […] *νομίζει δὲ εἶναι οὕτω μικρὰς τὰς οὐσίας ὥστε ἐκφυγεῖν τὰς ἡμετέρας αἰσθήσεις· ὑπάρχειν δὲ αὐταῖς παντοίας μορφὰς καὶ σχήματα παντοῖα καὶ κατὰ μέγεθος διαφοράς· ἐκ τούτων οὖν ἤδη καθάπερ ἐκ στοιχείων γεννᾷ καὶ συγκρίνει τοὺς ὀφθαλμοφανεῖς καὶ τοὺς αἰσθητοὺς ὄγκους.*

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9 *στασιάζειν δὲ καὶ φέρεσθαι ἐν τῷ κενῷ διά τε τὴν ἀνομοιότητα καὶ τὰς ἄλλας εἰρημένας διαφοράς, φερομένας δὲ ἐμπίπτειν καὶ περιπλέκεσθαι…*

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11 … *φερομένας δὲ ἐμπίπτειν καὶ περιπλέκεσθαι περιπλοκὴν τοιαύτην ἢ συμψαύειν μὲν αὐτὰ καὶ πλησίον ἀλλήλων εἶναι ποιεῖ, φύσιν μέντοι μίαν ἐξ ἐκείνων κατ' ἀλήθειαν οὐδ' ἡντιναοῦν γεννᾷ· κομιδῇ γὰρ εὔηθες εἶναι τὸ δύο ἢ τὰ πλείονα γενέσθαι ἄν ποτε ἕν. τοῦ δὲ συμμένειν τὰς οὐσίας μετ' ἀλλήλων μέχρι τινὸς αἰτιᾶται τὰς ἐπαλλαγὰς καὶ τὰς ἀντιλήψεις τῶν σωμάτων· τὰ*

μὲν γὰρ αὐτῶν εἶναι σκαληνά, τὰ δὲ ἀγκιστρώδη, τὰ δὲ κοῖλα, τὰ δὲ κυρτά, τὰ δὲ ἄλλας ἀναρίθμους ἔχοντα διαφοράς· ἐπὶ τοσοῦτον οὖν χρόνον σφῶν αὐτῶν ἀντέχεσθαι νομίζει καὶ συμμένειν ἕως ἰσχυροτέρα τις ἐκ τοῦ περιέχοντος ἀνάγκη παραγενομένη διασείσῃ καὶ χωρὶς αὐτὰς διασπείρῃ.

Simplicius, On Heaven 242, 18 (DK 67 a 14)

18 *οὗτοι γὰρ ἔλεγον ἀπείρους εἶναι τῷ πλήθει τὰς ἀρχάς, ἃς καὶ ἀτόμους καὶ ἀδιαιρέτους ἐνόμιζον καὶ ἀπαθεῖς διὰ τὸ ναστὰς εἶναι, καὶ ἀμοίρους τοῦ κενοῦ· τὴν γὰρ διαίρεσιν κατὰ τὸ κενὸ τὸ ἐν τοῖς σώμασι ἔλεγον γίνεσθαι…*

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21 *…ταύτας δὲ τὰς ἀτόμους ἐν ἀπείρῳ τῷ κενῷ κεχωρισμένας ἀλλήλων καὶ διαφερούσας σχήμασί τε καὶ μεγέθεσι καὶ θέσει καὶ τάξει φέρεσθαι ἐν τῷ κενῷ καὶ ἐπικαταλαμβανούσας ἀλλήλας συγκρούεσθαι, καὶ τὰς μὲν ἀποπάλλεσθαι, ὅπῃ ἂν τύχωσιν, τὰς δὲ περιπλέκεσθαι ἀλλήλαις κατὰ τὴν τῶν σχημάτων καὶ μεγεθῶν καὶ θέσεων καὶ τάξεων συμμετρίαν καὶ συμμένειν καὶ οὕτως τὴν τῶν συνθέτων γένεσιν ἀποτελεῖσθαι*. [Diels, *συμβαίνειν* στα χειρόγραφα]

Simplicius, On Heaven 712, 27 (DK 68 a 81)

… οἱ περὶ Δημόκριτον οἴονται πάντα μὲν ἔχειν βάρος, τῷ δὲ ἔλαττον ἔχειν βάρος τὸ πῦρ ἐκθλιβόμενον ὑπὸ τῶν προλαμβανόντων ἄνω φέρεσθαι καὶ διὰ τοῦτο κοῦφον δοκεῖν.

Theophrastus, On Sense Perception 61 (DK 68 a 135)

βαρὺ μὲν οὖν καὶ κοῦφον τῷ μεγέθει διαιρεῖ Δημόκριτος… οὐ μὴν ἀλλ' ἔν γε τοῖς μεικτοῖ κουφότερον μὲν εἶναι τὸ πλέον ἔχον κενόν, βαρύτερον δὲ τὸ ἔλαττον. ἐν ἐνίοις μὲν οὕτως εἴρηκεν· (62) ἐν ἄλλοις δὲ κοῦφον εἶναί φησιν ἁπλῶς τὸ λεπτόν.

Aetius I, 3, 18 (DK 68 a 47)

Δημόκριτος μὲν γὰρ ἔλεγε δύο, μέγεθός τε καὶ σχῆμα, ὁ δὲ Ἐπίκουρος τούτοις καὶ τρίτον βάρος προσέθηκεν… I, 12, 6: Δημόκριτος τὰ πρῶτά φησιν σώματα (ταῦτα δ' ἦν τὰ ναστὰ) βάρος μὲν οὐκ ἔχειν, κινεῖσθαι δὲ κατ' ἀλληλοτυπίαν ἐν τῷ ἀπείρῳ.

Diogenes Laertius, 10.13

[…] ἀλλ' οὐδὲ Λεύκιππόν τινα γεγενῆσθαί φησι φιλόσοφον, οὔτε αὐτὸς Ἕρμαρχος, ὃν ἔνιοί φασι καὶ Ἀπολλόδωρος ὁ Ἐπικούρειος διδάσκαλον Δημοκρίτου γεγενῆσθαί. […]