

# Epicurean Phantasia

---

DAVID KONSTAN  
New York University  
dk87@nyu.edu

Recibido: 25/09/2019 - Aceptado: 23/09/2020  
DOI <https://doi.org/10.20318/fons.2020.5049>

## **Abstract**

In this paper, I examine the role of *phantasia* in the Epicurean theory of perception and thought. Making use of newly edited fragments of Epicurus' *Peri phuseôs*, and recent interpretations of the role of *phantasia* in Aristotle, along with received texts of Epicurus and Lucretius, I consider such vexed questions as how *eidôla* or *simulacra* are reduced in size so as to enter the eye, and the channels by which they are transmitted from the eye to the mind. I discuss further the nature of *phantastikê epibolê*, that is, "the projection of *phantasia*", and its function in processes of thinking and remembering.

**Keywords:** *eidôla*, error, *phantasia*, *phantastikê epibolê*, *prolepsis*, *tupos*

## **Resumen**

En este artículo, examino el papel de la *phantasia* en la teoría epicúrea de la percepción y el pensamiento. Aprovechando de los fragmentos, recién editados, de la *Peri phuseôs* de Epicuro, y de nuevas interpretaciones de la función de *phantasia* según Aristóteles, además de textos transmitidos de Epicuro y de Lucrecio, considero problemas altamente discutidos tales como la manera en que los *eidôla* o *simulacra* se reducen de tamaño para que puedan entrar en el ojo, y los canales por los cuales se transmiten desde el ojo a la mente. Trato también de la naturaleza de la *phantastikê epibolê*, es decir, "la proyección de la *phantasia*", y su función en las actividades de pensar y recordar.

**Palabras clave:** *eidôla*, error, *phantasia*, *phantastikê epibolê*, *prolepsis*, *tupos*

In this paper<sup>1</sup>, I take up the vexed question of the nature of *phantasia* in Epicureanism, and more particularly what Epicurus dubs *phantastikê epibolê*, that is, "the projection of *phantasia*". The core text is Epicurus' *Letter to Herodotus* (*Ep.* [2]), 49-52, which is examined in detail below. I begin, however, with a discussion of

---

<sup>1</sup> An earlier and much different version of this paper was delivered at a Journée d'Études on "La Connaissance de Causes", on 8 June 2017, sponsored by the GDRI AITIA/AITIAI and Le Centre Léon Robin. That version was composed during the period of my fellowship at the Paris Institute for Advanced Studies (France), with the financial support of the French State managed by the Agence Nationale de la Recherche, programme "Investissements d'avenir" (ANR-11-LABX-0027-01 Labex RFIEA+), during the period 1 February to 30 June 2017; I am pleased to acknowledge my deep gratitude for that opportunity. I am indebted to Enrico Piergiacomi for astute comments on an earlier draft of this paper, and to the reports by two anonymous readers.

the Epicurean theory of sense perception, since perception is closely related to the mechanisms involving *phantasia*. In interpreting Epicurus' conception of *phantasia*, moreover, I make reference both to Democritus and to Aristotle, whose views, I believe, lie behind and stand to illuminate Epicurus' treatment. Of course, in contrast to Aristotle, Epicurus' account will have been strictly materialist, and any interpretation of his conception of *phantasia* must be compatible with the Epicurean physics of atomic motion in a void.

### 1. Perception

Explaining mental processes poses a special challenge to materialist theories of nature, and all the more so for one with the limited resources of ancient atomism. Perception is hard enough. Since the Epicureans appear to have rejected, or at least not exploited, geometrical optics, which assumed the transmission of visual phenomena by way of rays (cf. *aktines*, Epicur. *Ep.* [2], 49), they were left to work out the mechanics of vision and other senses solely through interactions among the atoms themselves. They postulated that objects continually emit atoms in more or less coherent formations, which in the case of sight, hearing, and smell are transmitted through the atmosphere and picked up by the sensory organ suited to receive that particular form of emission (*Ep.* [2], 48-53). These emanations must be very fine, so that they do not materially reduce the size of the original object even though they are continually being ejected (there is some evidence as well that a constant influx of atoms replenishes lost material; cf. *Ep.* [2], 48, οὐκ ἐπίδηλος τῇ μειώσει διὰ τὴν ἀνταναπλήρωσιν), and they must contain all the information needed to account for what we actually perceive, for example, in the case of vision, shape, size, color, and depth. The simplest account of how the effluences that enable vision convey the shape of an object is that they conform to its surface; thus the laminas, that is, *eidōla* or *simulacra*, were imagined as very thin films, curved in accord with the form of the object, that travel rapidly and in closely packed sequence from the object to the eye of the beholder.

This account gave rise to a well-known puzzle: if the *simulacra* indeed accurately reproduce both the shape and size of the emitting entity, how is it that images of something as large as a person or a mountain can enter the tiny aperture that is the pupil of the eye? There are various possible solutions. For example, the simulacra might shrink as they travel; alternatively, the eye might admit parts of the incoming films and then reassemble or process them, as Alexander of Aphrodisias suggested (*On Aristotle on Sense Perception* 58, 3-12; 60, 3-7; *Mantissa* 135, 6-18)<sup>2</sup>. It now seems clear that the simulacra are in fact capable of being compressed, thanks to the splendid new edition of the second book of Epicurus' *Peri phuseōs* by Giuliana Leone<sup>3</sup>. We learn here, as Francesca Guadalupe Masi has recently argued in detail, that Epicurus

<sup>2</sup> See AVOTINS (1980); BARNES (1989); RUDOLPH (2011), 67-83.

<sup>3</sup> LEONE (2012).

outlined the means by which images, once inside the eye, are communicated along internal pores or passageways to the sensorium, located in the chest. There is a process that Epicurus calls *sunizésis*, “compression” or “contraction”, to which simulacra are subject; it serves to reduce their size without compromising the information concerning the original shape of the object from which they emerged, and it seems to be initiated when the simulacra encounter a substance insufficiently porous to pass through it without major alteration. This mechanism operates in tandem with a binding force or *alléloukhía*, which keeps the effluences together despite the collisions they undergo while passing through the air. This latter notion we know only from Book 2 of the *Peri phuscós* or *On Nature*, and it suggests how much we may be missing when we depend exclusively on summaries, whether by Epicurus himself or in the doxographical tradition, for his doctrines. As Francesca Masi observes, «These concepts, ἀλληλουχία and συνίξεις, which Leone has the merit of having recovered, clarified, and submitted vigorously to the attention of critics, constitute the most relevant contribution of the second book of the work, *On Nature*, to our knowledge of the Epicurean doctrine of εἶδωλα»<sup>4</sup>. These same processes can, I think, be invoked to explain as well how the idols emitted by an object can diminish in size sufficiently to enter the eye, at a stage prior to the subsequent contraction that allows the impressions created within the eye to circulate through the tiny pores by which they reach the mind.

If this explanation is valid, then we may infer that Epicurus maintained that perception is a two-stage process, except in the case of those effluences that impinge directly on the mind or *animus* (e.g., the simulacra of the gods, who are perceived *non sensu sed mente*, Cic. *NDI* 19, 49). That is, the *simulacra* undergo a double transformation, as they are shrunk upon entering the sense organ (the paradigm case being vision) and again when they are transmitted through still smaller pores or vessels to the mind. At the site of the sensory organs themselves, the simulacra presumably stimulate or interact with what Lucretius calls the *anima*, consisting of fine soul atoms that are distributed throughout the body; this is the direct locus of sensation. As Francesco Verde observes, «sensation is the result of the convergence and coexistence of the soul and the body; on the one hand, the soul contains the greatest cause of sensation; on the other hand, if it were not for the ‘participation’ of the body, the organism would not be able to perceive anything. Thus, it is only the close conjunction

---

<sup>4</sup> MASI (2015, 119): «Questi concetti, ἀλληλουχία e συνίξεις, che Leone ha avuto il merito di recuperare, chiarire e proporre con forza all’attenzione della critica, costituiscono l’arricchimento più rilevante apportato dal secondo libro dell’opera *Sulla natura* alla nostra conoscenza della dottrina epicurea degli εἶδωλα». Masi notes that «Epicurus makes explicit reference to something that penetrates the mental aggregate as well, similar in shape to that which penetrates the sense organs. The term τὰ αἰσθητήρια is also used by Epicurus in the *Letter to Herodotus* very particularly to indicate the eyes. We know, then, that the mind is in a condition to receive the same kind of stimuli as those that penetrate the eyes» (114, citing Epicur. *Ep.* [2], 50, 5).

of the soul and the body that allows sensation»<sup>5</sup>; I add only that this juxtaposition must involve in the first instance those soul atoms that intermingle with the corporeal corpuscles at the site of perception. In the next operation, the simulacra are transmitted to the part of the soul that is concentrated in the chest, which Lucretius refers to indifferently as the *animus* or the *mens* (he employs the compound expression *mens animusque*, III 139)<sup>6</sup>.

There remain some questions about the process of perception, above all the role of the so-called *tupoi* or “impressions”. Repeated impacts of streams of simulacra entering the sense organs convey an impression or *tupos* of an object or kind of object. Pierre-Marie Morel summarizes the process as follows: «vision results from the reception of replicas (τύποι) or images (*simulacra*; εἰδωλα) that are naturally emitted by the object that is seen. Since they are directly transmitted by effluences which, in ideal conditions, preserve the structure and properties of the aggregate from which they come, these replicas allow us to form a representation or impression (φαντασία) which remains in ‘sympathy’ (συμπάθεια) with the object»<sup>7</sup>. The *tupoi*, however, are effects of the simulacra and not reducible to them. According to Democritus, at all events, as Kelli Rudolph has shown, «An object’s εἰδωλον flows toward the eye [...]. The air through which it moves [...] is condensed, i.e. ready for imprinting [...]. Eye effluences (i.e. visual rays) supply a simultaneous compression. The action of these two effluences moulds the air and results in an impression», which for Democritus takes place in the air. This impression contracts as it approaches the eye, where it is now «small enough to be ‘imaged in’ (ἐμφαίνεται) the pupil as an ἔμφασις»<sup>8</sup>. How long the air imprints endured, according to Democritus, is unclear; if they persist, then, as Theophrastus (*De sensu* 53) objected, one ought to be able to see them even when the object itself is not present. Although Rudolph deems it «more likely [...] that air imprints dissipate», she observes that «it may be in response to challenges of this sort that the Epicureans abandoned the theory of air imprints» (p. 81). But if this is the case, where did the *tupoi* form? The most reasonable hypothesis, it seems to me, is that they form at or in the sensory organ, prior to the transmission by way of internal

---

<sup>5</sup> VERDE (2015b, 54): «la sensazione è il risultato della convergenza e della coesistenza dell’anima e del corpo; per un verso, l’anima possiede la causa maggiore della sensazione; per un altro, se non vi fosse la ‘partecipazione’ del corpo, l’organismo non potrebbe percepire alcunché. E, dunque, solo la stretta congiunzione dell’anima e del corpo che permette la sensazione».

<sup>6</sup> There is some question about how and whether the distinction between *animus* (or *mens*) and *anima* corresponds to that which Epicurus seems to have drawn between the rational and irrational parts of the soul. Diogenes Laertius (X 66 = fr. 311 Usener) cites a scholium to the *Letter to Herodotus*, according to which Epicurus «says elsewhere that it [the soul] is made up of very smooth and round atoms, which differ greatly from those of fire; and one part of it is non-rational [*alogon*], and dispersed throughout the rest of the body; but the rational part [*to logikon*] is in the chest [*thôrax*], as is evident from fears [*phoboi*] and from joy [*khara*]». One might have supposed that rationality pertains to human beings only, but Lucretius uses both *animus* and *mens* of other animals (e.g., of a horse, II 265), and indeed they have to have had a central soul that processes sensations and transmit an intention (*voluntas*) to the rest of the body (II 261-94).

<sup>7</sup> MOREL (2007), 30 summarizing Epicur. *Ep.* [2], 50.

<sup>8</sup> RUDOLPH (2011), 76-77.

vessels to the *mens* or *animus*. It is only in the *animus*, located, as I have indicated, in the chest (and perhaps synonymous with the *logikon* part of the soul), that the *tupos* takes the form of a *phantasia* or idea proper.

## 2. *Idea*

The idea of idea, however, is itself complex. As Pierre-Marie Morel observes, «Epicureanism, like any empiricist philosophy, must confront the problem of the status of ‘ideas,’ whether these are understood as general notions, abstract representations, or simple thoughts. Since we grasp not only individuals (this cat, this tree here or that one there), but also classes or species (cats, of which that cat is an instance, trees in general), or again abstract notions (such as values), we necessarily grasp also ‘ideas,’ in the very broad sense that I am employing» (MOREL 2007, 25). Morel goes on to explain that «the Epicureans have available a very rich arsenal of terms, often difficult to distinguish clearly from one another, to designate the various kinds of ideas or general notions». Among these is *prolēpsis*, “preconception” or “presumption”, which, according to Cicero, was Epicurus’ own coinage (it was later adopted by the Stoics). *Prolēpsis* plays a special role in Epicurean epistemology. As Diogenes Laertius explains, «Preconception [*prolēpsis*], they [the Epicureans] say, is as it were a perception (*katalēpsis*), or correct opinion (*doxa orthē*), or conception (*ennoia*), or universal ‘store notion’ (*katholikē noēsis enapokeimenē*), i.e. memory of that which has frequently become evident externally: e.g. ‘such and such a kind of thing is a man’<sup>9</sup>. We may have a *prolēpsis* not only of a human being but also of gods, and still more generally, of justice. Animals, presumably, do not have preconceptions of these latter two (Epicurus states that «those animals which are incapable of making binding agreements with one another not to inflict nor suffer harm are without either justice or injustice», *Principal Saying* 32), but I assume they do have more concrete *prolēpseis*, inasmuch as cows and dogs can recognize other members of their species (it is possible, however, that this ability is due to memory alone). *Phantasiai*, however, are not concepts of this sort but rather something more like mental images that result when the *tupoi* that enter the senses reach the mind, and that may also be generated in the mind itself, whether by the impingement of rarefied simulacra that directly penetrate the *animus* or by an internal movement stimulated in some fashion by the *prolēpseis* that are the result of repeated sensations or by more transient deposits of sensory material.

## 3. *Phantasia*

In a recent paper, Andree Hahmann notes that «*phantasia* plays a crucial role in the Epicurean theory of perception», and he adds: «This is particularly remarkable if one takes the [...] similarities to the Aristotelian position into account, since Aristotle

---

<sup>9</sup> D.L. X 33, trans. LONG-SEDLEY; quoted by MOREL (2007), 27.

sharply differentiates *phantasia* from perception»<sup>10</sup>. In fact, Epicurus too distinguishes between *aisthêsis*, which takes place in the first instance in the *anima* (to employ Lucretius' handy terminology), and *phantasia*, which is located in the *animus* or *mens*. Nor is Aristotle himself entirely consistent in discriminating between *phantasia* and perception. In the *De anima*, he seems to allow for two types of *phantasia*, one that is rational (λογιστική), the other based on sense perception (αἰσθητική, *de An.* III 11, 433b 29); non-rational animals only have the second kind<sup>11</sup>. Despite its central importance in Aristotle's psychology, in which, as Krisanna Scheiter observes, *phantasia* «is necessary for dreaming, remembering, recollecting and even thinking», Aristotle's analysis in *de An.* III 3, his «most extensive discussion on *phantasia*, is extremely unclear»<sup>12</sup>.

Nevertheless, some points in Aristotle's treatment of *phantasia* stand out as reasonably certain. First of all, as Jessica Moss observes, «*phantasia* always arises from perception - that is, every episode of *phantasia* is based in some way on an episode of perception»<sup>13</sup>. Perception leaves traces in the soul in the form of *phantasmata*, which derive in turn from *aisthêmata* (*Insomn.* 461a 19; cf. *Mem.* 451a 3-4); thus, every *phantasma* «is a remnant [*hupoleimma*] of an actual sense-impression (*Insomn.* 461b 21-22)»<sup>14</sup>. Aristotle further affirms that the «passages of all the sense organs [...] run to the heart, or to its analogue in creatures that have no heart»<sup>15</sup>, from which it is plausible to infer that this is the pathway by which *aisthêta* are transmitted<sup>16</sup>. The

<sup>10</sup> HAHMANN (2015), 167.

<sup>11</sup> SORABJI (1993), 35, goes so far as to suggest that animals may even make certain kinds of judgments, according to Aristotle; he points specifically to the statement in *de An.* (II 6, 418a 21-22; III 6, 430b 29-30) that a lion perceives *that* (ὅτι) an ox is nearby, and affirms that this claim implies a kind of predication. So too, in *De anima* Aristotle affirms that it is by virtue of *phantasia* that we perceive that (ὅτι) a white thing is round or that it is a man. Conceivably, non-rational animals, although they are deprived of reason and thus of beliefs (*de An.* III 3, 428a 19-24), nevertheless do possess *phantasia* of a quasi-rational sort and hence can make something like perceptual predications.

<sup>12</sup> SCHEITER (2012), 25. SCHOFIELD (1992), 253, wittily observes of Aristotle that «it would be a triumph of generosity over justice to pretend that he manages to combine his different approaches to *phantasia* with an absolutely clear head»; cited in VOGT-SPIRA (2007), 29, an article valuable for the broader connection between *phantasia* and literary imagination.

<sup>13</sup> MOSS (2012), 52.

<sup>14</sup> MOSS, (2012), 52. Cf. VERDE (2016b), 50, who argues that, «secondo Aristotele, l'ὑπόλειμμα di per sé non è l'oggetto esterno di cui esso è, per l'appunto, la traccia residuale: come si vedrà, proprio in ciò sembra risiedere la divergenza concettuale tra l'ὑπόλειμμα di Aristotele e lo ἔγκατάλειμμα di Epicuro». Verde concludes that «se secondo Aristotele l'ὑπόλειμμα (di Corisco) è tale quale Corisco ma non è Corisco, per Epicuro l'ἔγκατάλειμμα (di Corisco) è Corisco, in diretta conformità con la sua dottrina dei simulacri che fonda la veridicità/realità della sensazione. Più chiaramente: per Aristotele il residuo/traccia è diverso dall'oggetto esterno, mentre per Epicuro esso è proprio l'oggetto» (60-61). I am not entirely convinced that Epicurus identified the residue with the object itself, but I reserve that discussion for another occasion.

<sup>15</sup> *De gen. an.* V 1, 781a 20-23; cited by SCHEITER (2012), 256.

<sup>16</sup> On the physiology behind Aristotle's account of *phantasmata* and *aisthêta*, see BUBB (2019), 311: «Sensation is instantaneous, faithfully representative, and directly dependent on external objects»; *phantasia*, in contrast, «is directly dependent on sensation, but a step removed from external objects». At a more basic level, «sensation consists of movements imprinted on the connate pneuma, which reverberate through the pneuma that exists in both the sense organs and the blood and arrive at the



id quod providet, illius rei constat imago,	885
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	890
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	895
corporis.	

«Next I will say how it comes about that we can carry onwards our steps when we please, how it has been given to us to move our limbs in different ways, what has caused the habit of pushing onwards this great bodily weight: do you attend to my sayings. I say that in the first place images of movement come in contact with our mind, and strike the mind, as I said before. After this comes wish; for no one ever begins anything until the intelligence has first foreseen what it wishes to do. (What it foresees, the image of that thing is present in the mind). Therefore when the mind so bestirs itself that it wishes to go and to step forwards, at once it strikes all the mass of spirit that is distributed abroad through limbs and frame in all the body. And this is easy to do, since the spirit is held in close combination with it. The spirit in its turn strikes the body, and so the whole mass is gradually pushed on and moves. Besides, at that moment the body also expands its pores, and the air (as you might expect with something always so sensitive to movement) passes and penetrates through the opened passages in abundance, and so is distributed abroad into the very smallest parts of the body»<sup>21</sup>.

Lucretius begins by affirming that, when we wish to walk, simulacra that represent the act of walking occur to the mind and impel or thrust it forward (881-882; for the sense of *pulso* see *OLD* s.v., def. 8). Exactly what the source of these simulacra may be is unclear, but we must be cautious about assuming that they are external, as the Loeb translation suggests by the rendering «strike the mind»<sup>22</sup>. This is how wish (*voluntas*) arises, for the mind undertakes no action before it has seen what it may wish (883-884). These verses may give the impression that one must foresee an action by sheer imagination before embarking on it (so the Loeb translation). But it is important to note that *providit* is perfect in tense, and that *provideo* in this context may mean “see in advance” (*OLD* s.v., def. 1), in which case the sense will be that we can only wish to do something if we have previously perceived such an act, a perfectly natural assumption that accords with Aristotle’s view that we only know what we have received through the senses, or in Moss’s words, «every episode of *phantasia* is based in some way on an episode of perception». This is indeed what Lucretius affirms when he states that «an image [*imago* = *phantasia*] arises of what the mind sees in advance»

<sup>21</sup> ROUSE-SMITH (1982); but I have rendered *voluntas* as “wish” rather than “will,” and *velit* as “wishes” rather than “wills”.

<sup>22</sup> Taken this way, *pulsare* is pleonastic, repeating the idea in *accidere*. The *simulacra meandi* may derive from stored up memories of walking, as indicated below.

(885). The mind or *animus* then communicates its wish, conceived as an image, to the *anima*, which is distributed throughout the body and so strikes it in turn. Air, which, as I understand it, is somehow the vehicle for the image, passes through the opened cavities of the body and reaches to its smallest parts. The entire process looks like perception in reverse: instead of the *tupos* or impression produced by incoming simulacra that is transmitted by vessels from the *anima* to the *animus*, where it takes the form of a *phantasia* or *phantasma*, the *imago* or *phantasia* is passed back through the pores or cavities via the *anima* to the remotest limbs, which it then sets in motion. There is a strong resemblance to Aristotle's conception, translated into the medium of atomic materialism<sup>23</sup>.

#### 4. Phantasia and Misperception

There is a further wrinkle in the role of *phantasia*, both in Aristotle's conception and in that of Epicurus, and that is its association with false perceptions. As Jessica Moss observes, «In the passages where he [i.e., Aristotle] offers definitions of *phantasia*, he characterizes it as a close relative of perception (αἴσθησις), and emphasizes its role in nonstandard perception and perceptual error» (MOSS 2012, 51). Thus, Aristotle writes:

«the sun appears [*phainetai*] a foot wide, though we are convinced that it is larger than the inhabited part of the earth. Thus either while the fact has not changed and the observer has neither forgotten nor lost conviction in the true belief which he had, that belief has disappeared, or if he retains it then his belief is at once true and false» (*De an.* III 3, 428a 24-b 8, cit. SCHEITER [2012], 272).

Krisanna Scheiter explains: «In order for an object to *appear* to be a foot wide the perception we are having must be similar to other perceptions we have had in the past that proved to be a foot wide. When we look at the sun, the impression the sun makes on the eye sets into motion and combines with other *foot-wide* images that are stored in the primary sense organ» (p. 274). Thus, according to Aristotle, «our beliefs are not constrained by our current perceptual experiences. We see the sun *as* a foot wide, but we know that the sun is a great distance from the earth and we also know that as things move further away from us they take up less space in our visual field and therefore look smaller» (275).

It is remarkable that Aristotle here offers as an example of a mistaken *phantasia* a problem that will prove to be crucial for Epicurus, who defended precisely the accuracy of our perception of the sun as being a foot wide, or thereabout<sup>24</sup>. For both Epicurus and Aristotle, the sun is perceived as a small disk. Epicurus reasons that the *simulacra* of the sun do not shrink vastly in the course of their transmission to the eye,

---

<sup>23</sup> As one of the anonymous referees reminds me, Aristotle uses the word *phantasia* in some contexts to designate something like a faculty, whereas in Epicurus the term is restricted to the sense of mental image or the like.

<sup>24</sup> See VERDE (2015b); also VERDE (2016b), 46 with n. 8; cf. ROMEO (1979).

since fires, unlike other distant objects, are observed not to diminish much in brightness or size over distances. Thus there is no contradiction between beliefs acquired through experience and what appears to perception. If we were convinced that the sun was very remote, then we would have a false notion of its size. The cause of such an erroneous conception is not the perception itself but a belief (*doxa* or, in Latin, *opinio*) that we have added to the perception, in this case that the appearance of a fiery object like the sun diminishes in the same proportion as other objects, or that the sun is much further away than (according to Epicurus) it really is<sup>25</sup>. Conceivably, the *phantasia* of the sun is itself corrupted by the false opinion, and thus differs in some fashion from the *aisthêton*, which is always valid. Alternatively, the mental image retains its integrity, and beliefs or opinions function in some other way to create a false inference concerning the sun's magnitude (the phrase "addition of opinion" would seem to distinguish the belief from the *phantasia*).

But what happens when the impression of something available to the senses is absent, as in the case of the image produced when we remember something that we previously saw or heard or smelled, whether in a waking state or while dreaming, or when we deliberately call something to mind? Does the difference between a *phantasia* and a sense impression lie, as Scheiter put it, not in the object - we see or remember the same thing - but in the source or cause?

##### 5. Epibolê Phantastikê

On the usual view of Epicurean epistemology, the object of *phantasia* is never absent: thinking or imagining is simply another sense, attuned to a mental object, which is to say, a flow of simulacra of the finer sort that directly penetrate the *animus*. Take the following abbreviated account, which is, I think, broadly representative of the current *communis opinio*:

«As far as the ideational content of thinking - that is, the thought of something - is concerned, Epicurus proposed a radically reductive hypothesis: just as sensations occur as a result of thin films emitted by objects that enter the appropriate sense organ, so too some of these simulacra are fine enough to penetrate directly to the mind (located in the chest), and that is how we imagine such objects (e.g., gods). This process is invoked to explain not only dream images, but many kinds of mental impression, including impressions constituting voluntary thought: the latter occur when we attend to one or another of the exiguous physical films that are continuously floating through the air [...]. Imagining a thing is thus nothing more than picking out the simulacra that have been emitted by it, and which may endure beyond the life of the thing itself (hence we can imagine the dead). These mental images [...] do not differ from the information provided by the senses. Mistakes occur here too when the wrong beliefs are associated with such impressions, for example, that because we have a mental image of a dead

---

<sup>25</sup> For a possible reason why Epicurus insisted that the sun was both small and near the earth, see FURLEY (1996).

person it follows that he or she still exists in a ghostly form. Epicurean physics proves that this is impossible»<sup>26</sup>.

I wish to take issue with this description, of which I happen to be the author. I propose that *phantasiai* can indeed arise in the mind by way of memory, although they are not entirely without reference to external objects. The process involved is the mysterious *epibolê tês dianôias* or *epibolê phantastikê*.

As Andree Hahmann observes, «It is well known that Epicurus ascribed to *epibole* a fundamental function in his epistemology. He even considered it as one of the criteria of truth (D.L. X 31, 3-5)»; actually, Diogenes Laertius says that “Epicureans” - presumably later members of the school - so classified it, but there is evidence that the doctrine in fact goes back to Epicurus himself. Hahmann notes that «there is wide disagreement about the exact nature of *epibole*», but, he argues, «the determination of the type of activity that is involved in perception depends on a correct interpretation of the Epicurean conception of *epibole*». I would say rather that *epibolê* is central not just to perception but also, and primarily, to ideas or *phantasiai*. Hahmann indeed notes that «there are two different kinds of *epibole* that are employed by Epicurus. He distinguishes between an *epibole* of the mind and an *epibole* of the sense organs (*Ad Her.* 50, 5-6: καὶ ἦν ἄν λάβωμεν φαντασίαν ἐπιβλητικῶς τῇ διανοίᾳ ἢ τοῖς αἰσθητηρίοις)». At this point, Hahmann reaffirms the conventional view of mental activity according to Epicurus: «With regard to their functions, it seems reasonable to assume that both are responsible for the selection of particular visual images from the vast number of images that affect the mind and the sense organs. According to a passage in Lucretius, this happens through an effort or focusing of the mind or the organs»<sup>27</sup>. There is, however, room for doubt as to whether Epicurus is distinguishing in this passage between two sorts of *epibolê*, one pertaining to the senses, the other to the mind<sup>28</sup>. In the phrase, καὶ ἦν ἄν λάβωμεν φαντασίαν ἐπιβλητικῶς τῇ διανοίᾳ ἢ τοῖς αἰσθητηρίοις (50, 5-6), quoted above, it is possible to take ἐπιβλητικῶς τῇ

<sup>26</sup> KONSTAN (2018).

<sup>27</sup> HAHMANN (2015), 164. Cf. VERDE (2016a), 345: «È certo che le ἐπιβολαὶ τῆς διανοίας compaiono, però, più volte nell'*Epistola a Erodoto* (35, 36, 38, 50, 51, 69, 70, 83) e nella RS XXIV, Lucrezio (II 740) sembra rendere ἐπιβολὴ τῆς διανοίας con *animi iniectus*, laddove la probabile traduzione fornita da Cicerone, *iniciens animus et intendens*, come già nel caso delle *notitiae*, non è lontana da quella di Lucrezio».

<sup>28</sup> Contra VERDE (2016b), 56: «Tale φαντασία, aggiunge Epicuro, dovrebbe essere afferrata ἐπιβλητικῶς, ossia ricorrendo con ogni probabilità a quella φανταστικὴ ἐπιβολή che, stando a Diogene Laerzio (X 31), gli Epicurei seriori considerarono un canone epistemologico a tutti gli effetti. Tale 'atto di applicazione,' con cui si identifica l'ἐπιβολή, è relativo tanto al pensiero quanto agli organi di senso (ἐπιβλητικῶς τῇ διανοίᾳ ἢ τοῖς αἰσθητηρίοις). Evidentemente non è possibile che, quanto all'attività dell'ἐπιβολή, la διάνοια e gli organi sensoriali si comportino allo stesso modo: secondo Epicuro, in ogni caso, la φαντασία può essere 'afferrata,' compresa (λάβωμεν) tramite l'ἐπιβολή del pensiero e quella dei sensi. L'esito di questo processo sarà che la φαντασία compresa coincida *esattamente* con la forma (esteriore) dell'oggetto solido (μορφή ἐστὶν αὐτῆ τοῦ στερεομένου) da cui i simulacri sono partiti. Ma in che modo si forma tale μορφή? O meglio: in che modo si forma la φαντασία di tale μορφή? Epicuro risponde che essa si genera κατὰ τὸ ἐξῆς πύκνωμα ἢ ἐγκατάλειμμα τοῦ εἰδῶλου». This last phrase is discussed below.

διανοίᾳ with φαντασίαν alone and not also with τοῖς αἰσθητηρίοις; on this reading, Epicurus states that we receive a *phantasia* either by way of an *epibolē* of thought or else by the *aisthêtêria*, without the element of projection in the latter case<sup>29</sup>. *Phantasiai* received via the senses would involve a two-stage process: first, simulacra will have struck the sense organ in question and transmitted to it a *tipos* or impression; the sensory information would then be forwarded, in compressed form but losing no relevant information, to the *animus*. As we have seen, Aristotle too seems to have allowed for both perceptual and mental *phantasiai*<sup>30</sup>.

What is the function, then, of *epibolē* in the reception of mental *phantasiai*? In accord with the prevailing view of Epicurean epistemology, *epibolē* has been associated with attention or focus, as a way of selecting among the innumerable simulacra floating in the ambient atmosphere. As Hahmann writes, «Today we are tempted to say that *epibole* draws the attention of the perceiver to certain visual images. As a result, a *phantasia* emerges in the soul». Hahmann immediately adds, however, that «it is problematic to connect *epibole* with attention taken in an unqualified sense. As some interpreters note, *epibole* occurs in dreams as well. Therefore, it is impossible to interpret *epibole* in line with just any form of deliberate conscious attention»<sup>31</sup>. But if *epibolē* does not represent an act of attention, what does it do? As a projection, if that is the right translation, it would appear to operate in the opposite direction to the reception of a *phantasia*, indicated by the term *lambanō*. Literally, the phrase ἦν ἂν λάβωμεν φαντασίαν ἐπιβλητικῶς τῇ διανοίᾳ should mean: “whatever *phantasia* we receive in the mind by projection (or by projection of the mind)”. To unpack this condensed expression, it is necessary to examine the entire passage in detail; for convenience, I divide it into two sections, which I discuss in turn.

I. [49] Δεῖ δὲ καὶ νομίζειν ἐπεισιόντος τινὸς ἀπὸ τῶν ἕξωθεν τὰς μορφὰς ὁρᾶν ἡμᾶς καὶ διανοεῖσθαι· οὐ γὰρ ἂν ἐναποσφραγίσαιτο τὰ ἕξω τὴν ἑαυτῶν φύσιν τοῦ τε χρώματος καὶ τῆς μορφῆς διὰ τοῦ ἀέρος τοῦ μεταξὺ ἡμῶν τε κἀκείνων, οὐδὲ διὰ τῶν ἀκτίνων ἢ ὧν δῆποτε ρευμάτων ἀφ’ ἡμῶν πρὸς ἐκεῖνα παραγινόμενων, οὕτως ὡς τύπων τινῶν ἐπεισιόντων ἡμῖν ἀπὸ τῶν

<sup>29</sup> *Aisthêtêria* presumably refers to the sense organs such as the eye and ear, though it may conceivably represent the seat where sensory information is processed, located in the mind.

<sup>30</sup> RUNIA (2018) argues that the *Placita* had sources other than those recorded in Diogenes Laertius; *Placita* IV 9 runs: Ἐπίκουρος πᾶσαν αἴσθησιν καὶ πᾶσαν φαντασίαν ἀληθῆ, τῶν δὲ δοξῶν τὰς μὲν ἀληθεῖς τὰς δὲ ψευδεῖς. καὶ ἡ μὲν αἴσθησις μοναχῶς ψευδοποιεῖται τὰ κατὰ τὰ νοητὰ, ἡ δὲ φαντασία διχῶς· καὶ γὰρ αἰσθητῶν ἐστὶ φαντασία καὶ νοητῶν («Epicurus (says that) every sensation and every impression is true, but of the opinions some are true and some false; and the sensation gives us a false picture in one respect only, namely with regard to objects of thought; but the impression does so in two respects, for there is impression of both sense objects and objects of thought», trans. Runia 429-430). A fragment from one of the lost books of Epicurus (fr. 38 Arrighetti) may suggest an association between *phantasia* and the *logikon* part of the soul, but the condition of the text renders any interpretation insecure:

[ ]ν[.]σε[.]α[.]ε[.]ως οὐδὲ κα[τὰ] φα[ν]τα- (10)  
σιαν, οὐδὲ [γ’] ἂν ἐπὶ λο[γ]ικ[ῆ]ν, κ[αθ]ῶς  
πολλάκις [ποι]οῦντα[ι]. οἱ δὲ γ[ε] — — προ

<sup>31</sup> HAHMANN (2015), 164; cf. Lucretius IV 962-1029.

πραγμάτων ὁμοχρόων τε καὶ ὁμοιομόρφων κατὰ τὸ ἐναρμόττον μέγεθος εἰς τὴν ὄψιν ἢ τὴν διάνοιαν, ὡκέως ταῖς φοραῖς χρωμένων, [50] εἶτα διὰ ταύτην τὴν αἰτίαν τοῦ ἐνὸς καὶ συνεχοῦς τὴν φαντασίαν ἀποδιδόντων καὶ τὴν συμπάθειαν ἀπὸ τοῦ ὑποκειμένου σωζόντων κατὰ τὸν ἐκείθεν σύμμετρον ἐπηρεισμόν ἐκ τῆς κατὰ βάθος ἐν τῷ στερεμνίῳ τῶν ἀτόμων πάλσεως. καὶ ἦν ἂν λάβωμεν φαντασίαν ἐπιβλητικῶς τῇ διανοίᾳ ἢ τοῖς αἰσθητηρίοις εἴτε μορφῆς εἴτε συμβεβηκότων, μορφή ἐστίν αὕτη τοῦ στερεμνίου, γινομένη κατὰ τὸ ἐξῆς πύκνωμα ἢ ἐγκατάλειμμα τοῦ εἰδῶλου.

I. [49] «Now we must suppose too that it is when something enters us from external objects that we see and think of their shapes. For external objects could not stamp on us [ἐναποσφραγίσαιτο] the nature of their own color and shape by means of the air which lies between us and them, nor again by means of the rays [τῶν ἀκτίνων] or effluences of any sort which pass from us to them - nearly so well as if certain impressions [τύπων], similar in color and shape, coming from the objects enter our sight or mind in a suitable size, maintaining their swift motions, [50] and then, in this way, yielding [ἀποδιδόντων] an image [φαντασίαν] of a single continuous thing and preserving an affinity [συμπάθειαν] with the object in accord with the proportional impact from there, [that is,] from the vibration of the atoms according to their depth within the solid body. Every image [φαντασίαν] that we receive by the mind in a projective way [ἐπιβλητικῶς τῇ διανοίᾳ] or by the sense-organs, whether of shape or of properties, is the shape of the solid body, generated by the continual pressure [πύκνωμα] or residue [ἐγκατάλειμμα] of the simulacrum»<sup>32</sup>.

Epicurus begins by distinguishing his theory of perception from two others. First is the notion that external objects leave a seal in the air between themselves and the observer - clearly an allusion to Democritus' view of the way in which the *tupos* is produced at the intersection of the εἶδῶλον of the object that flows toward the eye and the eye's own effluences. Second is the idea that vision results from rays that travel from the eye to the object: this is the so-called extramission account, as opposed to intromission, by which the motion is from the object to the eye - a view associated principally with Empedocles and Plato (*Ti.* 45b-46a). Epicurus might easily have incorporated extramission in his atomic system, since simulacra are constantly emitted from the eye as well as from other objects, and if impressions or *tupoi* are lodged in the sensory organs, this information too might be carried by the effluences. But Epicurus does not apply the terminology of projection to *tupoi* but rather to *phantasiai*, and more specifically those received by the mind. Mental images would thus appear to involve a two-way process, both afferent (*lambanein*) and efferent (*ekballein*): we receive images mentally in a way that involves a kind of projection. But how does this work - what is projected, and to what destination? I will suggest that *phantasiai* in the mind are received from memory (or stored up images) and projected or emitted in turn to the sensory organ, by the same vessels along which the *tupoi* were originally transmitted to the *animus*. Before proceeding further with the demonstration, we may turn to the second half of the passage under consideration

<sup>32</sup> My translation; text as in DORANDI (2013), except where noted.

(words in square brackets and smaller type are not translated; the reader is forewarned that the text is in some places highly insecure; see below):

Π. τὸ δὲ ψεῦδος καὶ τὸ διημαρτημένον ἐν τῷ προσδοξαζομένῳ αἰεὶ ἐστὶν <ἐπὶ τοῦ προσμένοντος> ἐπιμαρτυρηθῆσεσθαι ἢ μὴ ἀντιμαρτυρηθῆσεσθαι, εἴτ' οὐκ ἐπιμαρτυρουμένου <ἢ ἀντιμαρτυρουμένου> [κατὰ τινα κίνησιν ἐν ἡμῖν αὐτοῖς συνημμένην τῇ φανταστικῇ ἐπιβολῇ, διάληψιν δὲ ἔχουσαν, καθ' ἣν τὸ ψεῦδος γίνεται.]<sup>33</sup> [51] Ἡ τε γὰρ ὁμοιότης τῶν φαντασμῶν οἴονεϊ ἐν εἰκόνι λαμβανομένων ἢ καθ' ὑπνοὺς γινομένων ἢ κατ' ἄλλας τινὰς ἐπιβολὰς τῆς διανοίας ἢ τῶν λοιπῶν κριτηρίων οὐκ ἂν ποτε ὑπῆρχε τοῖς οὐσί τε καὶ ἀληθεῖσι προσαγορευομένοις εἰ μὴ ἦν τινα καὶ ταῦτα πρὸς ἃ βάλλομεν · τὸ δὲ διημαρτημένον οὐκ ἂν ὑπῆρχεν εἰ μὴ ἐλαμβάνομεν καὶ ἄλλην τινὰ κίνησιν ἐν ἡμῖν αὐτοῖς συνημμένην μὲν <τῇ φανταστικῇ ἐπιβολῇ,><sup>34</sup> διάληψιν δὲ ἔχουσαν· κατὰ δὲ ταύτην [τὴν συνημμένην τῇ φανταστικῇ ἐπιβολῇ, διάληψιν δὲ ἔχουσαν]<sup>35</sup>, ἐὰν μὲν μὴ ἐπιμαρτυρηθῇ ἢ ἀντιμαρτυρηθῇ, τὸ ψεῦδος γίνεται· ἐὰν δὲ ἐπιμαρτυρηθῇ ἢ μὴ ἀντιμαρτυρηθῇ, τὸ ἀληθές. [52] Καὶ ταύτην οὖν σφόδρα γε δεῖ τὴν δόξαν κατέχειν, ἵνα μὴτε τὰ κριτήρια ἀναιρῆται τὰ κατὰ τὰς ἐνεργείας μῆτε τὸ διημαρτημένον ὁμοίως βεβαιούμενον πάντα συνταράττη.

Π. «Now falsehood and error always lie in the addition of opinion with regard to what is waiting to be confirmed or not disconfirmed, and then is not confirmed or is disconfirmed. [51] For the similarity of the images [φαντασμῶν] that are received as in a picture, or that arise in sleep or any other projections of the mind [ἐπιβολὰς τῆς διανοίας] or the other criteria [κριτηρίων], to things which exist and which are called true could not be if there were not these things against which we project [πρὸς ἃ βάλλομεν]. And error would not exist if we did not receive some other motion [κίνησιν] within ourselves that is fitted<sup>36</sup> to the imagistic projection [φανταστικῇ ἐπιβολῇ] but has some difference [διάληψιν]; and it is in accord with this [sc. projection]<sup>37</sup>, if it is not confirmed or is disconfirmed, that falsehood arises, but if it is confirmed or not disconfirmed, the truth. [52] It is therefore necessary to hold on firmly to this belief, so that neither may the criteria in respect to actualities be destroyed nor error be equally established and confound everything».

Epicurus' discussion of imagistic projection is closely bound up with his analysis of error. Accurate images reach the mind through various channels, but they are subject to distortion because of beliefs that we hold that are not properly derived from sensory or mental inputs but arise in other ways (Epicurus does not specify here how we acquire false opinions, but they are caused partly by mistaken inferences, for example concerning the distance of the sun on the analogy with other perspectival phenomena,

<sup>33</sup> DORANDI (2013) omits Usener's supplement <ἐπὶ τοῦ προσμένοντος> and obelizes ἐπιμαρτυρηθῆσεσθαι ἢ μὴ ἀντιμαρτυρηθῆσεσθαι [...] καθ' ἣν τὸ ψεῦδος γίνεται.

<sup>34</sup> Supplied by Usener; DORANDI (2013) omits it.

<sup>35</sup> The phrase is omitted in ms. Z, and marked as a gloss by Usener; it is enclosed in curly braces by Dorandi.

<sup>36</sup> συνημμένην (from *sunaptein*) is often used of thought; cf. LSJ s.v., def. 2.

<sup>37</sup> Conceivably the antecedent of κατὰ δὲ ταύτην is *dialêpsis*, in which case Epicurus will have meant that confirmation and the reverse depend on the difference between the *phantasia* and the object; however, I think it more likely that the *epibolê* is meant, as the criterion that allows one to verify the accuracy of the *phantasia*.

and partly from commonplace but erroneous habits of thought, as in the case of superstitions regarding the nature of the gods). Physically, such fallacious opinions take the form of mental motions, which indeed bear a relation to the images we receive either directly by the mind or by the senses, but nevertheless differ from them in some respect. To eliminate such deviations, it is necessary to test our mental images against their external sources, to see whether they are confirmed or disconfirmed. This takes place by projecting the *phantasia* onto the source of the image. This might be conceived of as the incoming simulacra, but because Epicurus rejects extramission in the visual process, it is likely that the projection is entirely internal to the organism. It is when the projected *phantasia* encounters the *tupos* from which it originated that it can be confirmed, which is to say, shown to match the impression, or else disconfirmed, due to its deviation (*dialépsis*) from it: there is not a perfect fit. Such projection is the process in which one must consistently engage to be sure that our ideas are true. It may thus be regarded as a criterion, according to Epicurean epistemology, since, like perception, the *pathê* of pain and pleasure, and the *prolēpseis*, it delivers the truth about the world.

Some further observations are in order. First, projection is not only a means of putting images to the test; it occurs on a regular basis as one of the ways we acquire information, along with, for example, visions we have while asleep. There seems to be a constant back and forth between the senses and the *animus* or *dianoia*, presumably along the pores or vessels by which sensory information is transmitted to the mind. Second, it must be acknowledged that the text of Epicurus' letter is rather a mess; this pertains not only to the obvious repetitions and misplaced phrases, which editors adjust in various ways, but also to the reading of crucial words. The prime instance is the phrase, "if there were not these things against which we project". The last words correspond to the Greek πρὸς ἃ βάλλομεν, which conforms to the manuscripts (though some read ὅ instead of ἃ) and is retained by Dorandi, but was emended by Usener to εἰ μὴ ἦν τινα καὶ τοιαῦτα προσβαλλόμενα<sup>38</sup>. We may note too that confirmation here is not deduction or inference, but takes the form of a comparison of the image in our mind with the imprint on the senses (or, it may be, directly on the mind), which involves, on an atomistic account, the physical encounter of the image with the corresponding *tupos* - a process that may be deliberate but, I presume, need not be: there may be an ongoing interchange along the connecting apertures of which we must simply take notice (or hold on to the belief, as Epicurus puts it). The same process is at work in non-human animals, I suppose, but since they do not have beliefs, there is no danger that their mental images will be biased and so the projected *phantasiai* will always correspond accurately to the sensory impression<sup>39</sup>.

---

<sup>38</sup> HICKS (1925) reads εἰ μὴ ἦν τινα καὶ τοιαῦτα πρὸς ἃ παραβάλλομεν; Verde (2010) plausibly prints τινα καὶ ταῦτα πρὸς ἃ <ἐπι>βάλλομεν; others emend variously. Gassendi is responsible for emending ταῦτα το τοιαῦτα.

<sup>39</sup> I have not taken account of a possible distinction between φαντασίαι and φαντασμοί, but have treated the two terms as synonymous in this context. Both terms are distinct, I believe, from *phantasma*,

## 6. Conclusion

Since all perceptions are true, according to Epicurus, and yet people clearly have incorrect ideas about the world, it was incumbent upon the Epicureans to explain how such mistaken conceptions arise. The answer lay in atomic motions inside the *mens* or *animus* that alter and distort the *phantasiai*, which originate in the transmission of impressions from the senses to the mind but are subject to internal influences. These *phantasiai* are able to circulate back to the sensory organs by the same vessels that communicate to the *animus* the *tupoi* produced by simulacra. There, they either match the sensory impressions or differ in some respect; if they differ, it is a sign that they are erroneous. The important thing is to be attentive to possible discrepancies. The projected mental image will, upon contact, indicate whether it is true or not, and in this respect constitutes a valid criterion.

## References

Avotins (1980):

Avotins, I., «Alexander of Aphrodisias on Vision in the Atomists», *The Classical Quarterly* XXX, 429-454.

Barnes (1989):

Barnes, J., «The Size of the Sun in Antiquity», *Acta Classica Universitatis Scientiarum Debrecensis* XXV, 29-41, repr. in Barnes, J., *Mantissa: Essays in Ancient Philosophy*, IV, Oxford 2015, 1-20.

Bubb (2019):

Bubb, C., «The Physiology of Phantasmata in Aristotle: Between Sensation and Digestion», *Apeiron* LVII, 273-315.

Dorandi (2013):

Dorandi, T., *Diogenes Laertius: Lives of Eminent Philosophers*, Cambridge.

Furley (1996):

Furley, D., «The Earth in Epicurean and Contemporary Astronomy», in Giannantoni, G., Gigante, M. (eds.), *Epicureismo greco e romano: Atti del congresso internazionale (Napoli, 19-26 maggio 1993)*, I, Napoli, 119-125.

---

which seems to mean “appearance”. At D.L. X 31, φαντάσματα are the images perceived by madmen. At Epicur. *Ep.* [2], 75, they refer to the individual (ἴδια) way in which things appear to different peoples or ethnic groups, which explains the differences among languages. Cf. *Pyth.* 87 on the multiple explanations of celestial phenomena: τὸ μόντοι φάντασμα ἑκάστου τηρητέον καὶ ἐπὶ τὰ συναπτόμενα τούτω διαριετέον, ἃ οὐκ ἀντιμαρτυρεῖται τοῖς παρ’ ἡμῖν γινομένοις πλεοναχῶς συντελεῖσθαι (also 102, 110). Enrico Piergiacomì points out to me that Chrysippus distinguished between *phantasia*, *phantaston*, *phantastikon* and *phantasma* (*SVF* II, 54); the first two are always true, while the latter two may be empty and false (Chrysippus gives as an example of *phantasmata* the visions of the Furies that Orestes wrongly believes to be real). I think it is entirely possible that Chrysippus derived this distinction from Epicurus (just as the Stoics took over the term *prolēpsis* and much else from the Epicureans, adapting the earlier doctrine to their own system); a full analysis must await a future discussion.

- Hahmann (2015):  
Hahmann, A., «Epicurus on Truth and Phantasia», *Ancient Philosophy* XXXV, 155-182.
- Hicks (1925):  
Hicks, R.D., *Diogenes Laertius: Lives of Eminent Philosophers*, Cambridge MA.
- Konstan (2018):  
Konstan, D., «Epicurus», in Zalta, E.N. (ed.), *The Stanford Encyclopedia of Philosophy* (Summer 2018 Edition), URL = <https://plato.stanford.edu/archives/sum2018/entries/epicurus>.
- Leone (2012):  
Leone, G. (ed.), *Epicuro: Sulla natura. Libro II*, Napoli.
- Masi (2015):  
Masi, F., «Dagli occhi alla mente: Il cammino tortuoso degli εἰδῶλα», in Masi, F.G., Maso, S. (eds.), *Epicurus on Eidola: Peri Phuseos Book II. Update, Proposals, and Discussions*, Amsterdam, 107-134.
- Morel (2007):  
Morel, P.-M., «Method and Evidence: On Epicurean Preconception», *Proceedings of the Boston Area Colloquium in Ancient Philosophy* XXIII, 25-48.
- Moss (2012):  
Moss, J., *Aristotle on the Apparent Good: Perception: Phantasia, Thought, and Desire*, Oxford.
- Romeo (1979):  
Romeo, C., «Demetrio Lacone sulla grandezza del sole (PHerc. 1013)», *Cronache Ercolanesi* IX, 11-35.
- Rouse-Smith (1982):  
Rouse, W.H.D. (trans.), *Lucretius: On the Nature of Things*, revised by Smith, M.F., Cambridge MA.
- Rudolph (2011):  
Rudolph, K., «Democritus' Perspectival Theory of Vision», *Journal of Hellenic Studies* CXXXI, 67-83.
- Runia (2018):  
Runia, D.T., «Epicurus and the Placita», in Mansfeld, J., Runia, D.T. (eds.), *Aëtiana IV: Papers of the Melbourne Colloquium on Ancient Doxography*, Leiden, 377-432.
- Sorabji (1993):  
Sorabji, R., *Animal Minds and Human Morals: The Origins of the Western Debate*, Ithaca NY.
- Scheiter (2012):  
Scheiter, K.M., «Images, Appearances, and Phantasia in Aristotle», *Phronesis* LVII, 251-278.
- Schofield (1992):  
Schofield, M., «Aristotle and the Imagination», in Nussbaum, M.C., Rorty, A.O. (eds.), *Essays on Aristotle's De anima*, Oxford, 249-277.
- Verde (2010):  
Verde, F., *Epistola ad Erodoto*, Roma.

Verde (2015a):

Verde, F., «Epicuro e la grandezza del sole: sul testo di Pyth. 91», *Méthexis* XXVIII, 104-110.

Verde (2015b):

Verde, F., «Monismo psicologico e dottrina dell'anima in Epicuro e Lucrezio», in Canone, E. (ed.), *Anima-corpo alla luce dell'etica: antichi e moderni*, Firenze, 49-64.

Verde (2016a):

Verde, F., «Epicuro nella testimonianza di Cicerone: la dottrina del criterio», in Tulli, M. (ed.), *Testo e forme del testo: Ricerche di filologia filosofica*, Pisa, 335-368.

Verde (2016b):

Verde, F., «Percezione, errore e residuo percettivo in Aristotele, Epicuro e Alessandro di Afrodisia», *Giornale Critico della Filosofia Italiana*, Serie 7, XII, 44-62.

Vogt-Spira (2007):

Vogt-Spira, G., «Secundum verum fingere: Wirklichkeitsanschauung, Imagination und Fiktionalität: Epistemologische Überlegungen zur hellenistisch-römischen Literaturkonzeption», *Antike und Abendland* LIII, 21-38.