

Beyond Imprints: The Epicureans On Memory

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Abstract

This paper investigates a central aspect of the Epicureans' theory of memory. After outlining their multi-faceted interest in memory, it challenges the widely held assumption that Epicurean atomistic psychology adopted the Platonic and Aristotelian model of memories as 'imprints' (τύποι) in the soul. It then develops an alternative reconstruction of Epicurean memory, grounded in Epicurean accounts of imagination and dreaming, and assesses its textual support and theoretical advantages.

An enduring way of conceptualising memories—and more generally perceptions and thoughts—as 'imprints', 'inscriptions' or 'pictures' in the soul is among Plato's lasting legacies. The 'wax block' model introduced in the *Theaetetus* proved hugely influential:

(T1) Now I want you to suppose, for the sake of the argument, that we have in our souls a block of wax, larger in one person, smaller in another, and of purer wax in one case, dirtier in another; in some people rather hard, in others rather soft, while in some it is of the proper consistency. [...] We may look upon it, then, as a gift of Mnemosyne, the mother of the Muses. We make imprintings (ἀποτυποῦσθαι) upon this of everything we wish to remember (μνημονεῦσαι) among the things we have seen or heard or ourselves have thought; we hold the wax under our perceptions and thoughts and take a stamp from them, in the way in which we stamp in the marks of signet-rings (ὥσπερ δακτυλίων σημεῖα ἐνσημαινομένου). Whatever is sealed upon the wax we remember and know so long as the image remains (καὶ ὁ μὲν ἂν ἐκμαγῆ, μνημονεύειν τε καὶ ἐπίστασθαι ἕως ἂν ἐνῆ τὸ εἶδωλον αὐτοῦ); whatever is obliterated or cannot be sealed, we forget and do not know (ὁ δ' ἂν ἐξαλειφθῆ ἢ μὴ οἶόν τε γένηται ἐκμαγῆναι, ἐπιλελῆσθαι τε καὶ μὴ ἐπίστασθαι). (Pl. *Tht.* 191c8–e1; transl. Levett, rev. by Burnyeat, slightly revised)

According to this passage and its broader context (191e–196c), if X's perception or thought of Y produces an 'imprint' (τύπος), 'seal' (σφραγίς, ἐκμαγεῖον), 'image' (εἶδωλον), 'reminder' (μνημεῖον), 'mark' (σημεῖον) or 'track' (ἵχνος) in X's memory, and X retains this trace, then X remembers (and knows) Y; if no such trace is formed, or it is later erased, X forgets (and does not know) Y.¹

Related metaphors recur elsewhere in Plato. In the *Philebus*, the soul is likened to an illustrated book, on which an inner scribe records judgements, while memory in particular is associated with an inner painter who draws the corresponding 'pictures' or 'images' (εἰκόνας)

¹ For analysis of this passage, see, e.g., Sedley 2004: 134–49; Gonzales 2007.

(38b12–39c5).² In the *Timaeus* (26c), certain especially vivid and long-lasting memories are compared to ‘encaustic marks’ (ἐγκαύματα) ‘burnt in’ the soul.³

These ways of thinking about memory, along with reflections on their limitations, remained influential throughout antiquity—and beyond. The following passages illustrate Aristotle’s debt to Plato—and to the tradition that inspired Plato⁴—in his accounts of perception and memory:

(T2) It is clear that we must conceive that which is generated through sense-perception in the soul, and in the part of the body which is its seat,—namely that affection the having which we call memory—to be some such thing as a picture (ζωγράφημα τι). The process of movement stamps in, as it were, a sort of imprint of the percept (ἐνσημαίνεται οἷον τύπον τινὰ τοῦ αἰσθήματος), just as those do who seal with signet-rings (οἱ σφραγιζόμενοι τοῖς δακτυλίοις). (Aristot. *Mem.* 1, 450a27–32)⁵

(T3) Generally, about all sensation, we can say that a sense is what has the power of receiving into itself the sensible forms of things without the matter, in the way in which the wax takes on the mark of a signet-ring without the iron or gold (οἷον ὁ κηρὸς τοῦ δακτυλίου ἄνευ τοῦ σιδήρου καὶ τοῦ χρυσοῦ δέχεται τὸ σημεῖον). (Aristot. *An.* II 12, 424a17–24)⁶

This paper investigates a central aspect of the Epicureans’ theory of memory. After outlining their multi-faceted interest in memory, it re-examines, with a sceptical eye, the question of whether Epicurean atomistic psychology adopted the earlier Platonic and Aristotelian conception of memories as imprints in the soul, a view widely assumed in the scholarship. It then develops an alternative reconstruction of the Epicurean physiology of memory, grounded in Epicurean accounts of imagination and dreaming, and assesses both its textual support and its theoretical advantages. The conclusion briefly considers the scope of Epicurean memory and its relation to knowledge, and raises the question whether these considerations shaped the Epicurean physiology of memory.

1. The Epicurean emphasis on memorisation and remembering

Both Epicurus and later Epicureans placed a striking emphasis on *memorising* Epicurean doctrines and writings:

(T4) He [sc. Diocles] says that he [Epicurus] used to train his friends to commit his writings to memory (διὰ μνήμης ἔχειν τὰ ἑαυτοῦ συγγράματα). (Diog. Laert. X 12)

² For analysis of this passage, see, e.g., King 2019.

³ Encaustic painting is a technique in which pigments are mixed with hot wax. After the paint has been applied to the support, a heating source is passed over the surface until the marks fuse into a uniform film, and the colours are ‘burnt in’ to the support. For an ancient account of the technique, see Plin. *Nat.* XXXV 122–23.

⁴ See, e.g., Havelock 1963; 1982; Thomas 1992; Small 1997; Agócs 2019.

⁵ When not otherwise stated, the translations of Greek and Latin texts are mine.

⁶ See also Aristot. *An.* III 4, 429b29–430a2.

(T5) And you others, try ten thousand times over to remember (μνημονεύειν) what I and Metrodorus here have just said. (Epic. *Nat.* XXVIII, fr. 13 col. XIII, 2–6 Sedley)

This would have been anathema to Plato's Socrates, for whom rote memorisation of authoritative doctrines—whether oral or written—cannot lead to knowledge. Active, non-dogmatic, 'recollective' dialectical investigation is the road to learning, virtue and happiness.⁷ In Aristotle too, memory is never identified with knowledge; it is, narrowly, the way in which human beings and some other animals retain their first and fundamental form of cognition, sense-perception, although it plays a role in the process leading to (the higher form of) knowledge (ἐπιστήμη) (Aristot. *APo.* II 19, 100a; *Metaph.* A 1, 980a–981a). By contrast, the exhortation to commit Epicurean doctrines to memory and recall them constantly is so central that it is encapsulated in Epicurus' very last words:

(T6) He [sc. Epicurus] died [...] having been ill for fourteen days. Hermippus too says that he climbed into a bronze bath filled with hot water, asked for a cup of unmixed wine and gulped it down. Telling his friends to remember his doctrines (τῶν δογμάτων μεμνηῆσθαι), this is how he died. (Diog. Laert. X 15–16)

As late as the 2nd century AD, we still find in Diogenes of Oenoanda's inscription a clear illustration of the same insistence on retaining an Epicurean doctrine in memory ('the doctrine [...] that the standard of our actions are the feelings of [both] pleasure and [pain]') and recalling it whenever appropriate (fr. 70 Ferguson Smith). Here, indeed, the ability to recall the doctrine appears to be identified with knowledge itself ('a firm grasp').

Let us examine Epicurus's own account of the function of his letters as memory aids:

(T7) [35] Herodotus, for those who cannot work out in detail each of the things we have written on nature, or examine closely the longer books we have composed, I have myself prepared an adequate summary of the whole system, to acquire the memory (τὴν μνήμην) of the most general doctrines, so that on each occasion they may be able to help themselves in the most important issues, insofar as they touch upon the inquiry on nature. And even those who have advanced adequately in the observation of the universe must remember the elementary outline of the whole system (τὸν τύπον τῆς ὅλης πραγματείας τὸν κατεστοιχειωμένον δεῖ μνημονεύειν); for we often need the overall application, but not equally often the particular one. [36] We must return, then, to those things continuously, and commit to memory (ἐν τῇ μνήμῃ ποιητέον) as much as will allow the principal application to the things. And, in fact, complete precision about particular points will be found if the most general outlines are well grasped and remembered (τῶν ὀλοσχερωτάτων τύπων εὖ περιειλημμένων καὶ μνημονευομένων); for even in the case of the fully initiated this becomes the principal point of complete precision, the ability to make quick use of his applications, and this would not be possible unless everything were referred to elementary principles and maxims. For it is not possible to know the dense body of our continuous study of the universe unless one can encompass in oneself, by means of short maxims, all that might also be worked out precisely particular by particular. (Epic. *Her.* 35–6; see also 68 and 83)

Epicurus distinguishes three readerships who will benefit from memorising the contents of the letter:

⁷ For a summary sketch of this idea, see Castagnoli 2020.

- (1) Epicurean novices or near-novices, who lack either the capacity or the time to study the longer treatises, including Epicurus' *On Nature* ('those who cannot work out in detail each of the things we have written on nature, or examine closely the longer books we have composed');
- (2) Epicurean intermediate students, already well acquainted with the system ('those who have advanced adequately in the observation of the universe');
- (3) Epicurean philosophers, possessing extensive command of all or most details of the system ('the fully initiated').⁸

Notably, the letter is *not* intended as a first introduction to Epicurean physics, nor as a general protreptic aimed at philosophical outsiders.

All of these readers will benefit from *committing to memory* the most fundamental principles and general outlines (τύποι) of Epicurean physics. For readers of types (2) and (3), this cannot be because they will acquire new information. Rather, memorisation serves to restructure and systematise what might otherwise remain a collection of disparate details. It enables a rapid grasp of the relevance of general doctrines to specific circumstances and facilitates their appropriate application.⁹ In this way, at least for some readers, memorising the outlines affords both a more rigorous understanding of the whole and a more precise grasp of the details;¹⁰ for other readers, it provides sufficient physical foundations for Epicurus' ethical goal: the pursuit of happiness, understood as psychological tranquillity (ἀταραξία) and the absence of pain (ἄπνοια).

Epicurus offers a similar, though less nuanced, account of the importance of memorising short epitomes at the opening of his *Letter to Pythocles*, devoted to a summary of astronomy and meteorology (*Pyth.* 84–5; see also 116). Here again, the letter's purpose is not to provide readers with information otherwise unavailable to them (Pythocles, the addressee, already has Epicurus' books 'constantly' with him), but to enable all students of Epicurean philosophy, including advanced ones, to recall concise formulations of fundamental principles quickly.

There is no explicit reference to memory or memorisation in the *Letter to Menoeceus* but, as Asmis notices (2001: 219–20), 'as a protreptic discourse, it is eminently suitable for the beginning student to memorize. [...] Consisting of detachable sections, it is replete with balanced phrases and aphorisms. Epicurus commands the student both at the beginning and at the end of the letter to "practice" (μελετᾶν) what he has proclaimed. The term "practice" is used here in the special sense of "rehearsing" a text.'

We may attribute a similar function—that of providing an easy-to-memorise, synoptic view that renders understanding of the whole both more precise and more readily accessible—to the pithy memorable maxims collected in the *Kuriai doxai* (*Principal Doctrines*), although these differ from the systematic and integrated form of the letters.¹¹

⁸ For discussion of these readerships, and more generally of the theme of memory in Epicurus' *Letters*, see Spinelli 2019. For the Epicurean use of compendia, and the relationship between this use and the Epicurean emphasis on memorisation, see Damiani 2021.

⁹ Damiani 2021: 124 aptly describes this as a 'syllogistic' function of the memorisation and recall of the outlines.

¹⁰ See Morel 2024 for discussion of two interconnected meanings of the term ἀκρίβεια in this context: 'rigour of the highest and most general knowledge' and 'precision of detail'.

¹¹ For some notes on how Lucretius' style has a didactic function, favouring memorisation, see Schiesaro 1996.

None of this implies that rote memorisation of Epicurean doctrines is by itself *sufficient* either for knowing them or for living by them and attaining happiness.¹² Some degree of understanding must be required for someone to genuinely remember those doctrine, as opposed to merely parrot words. Some degree of active reflection, appropriation and internalisation will also be needed.¹³ Nonetheless, memorisation is meant to play an essential role in reaching the level of understanding of the system required for Epicurean therapy to be effective.¹⁴

The epitome of Epicurean philosophy that Diogenes had carved onto a portico wall in his hometown of Oenoanda¹⁵ functioned both as a reminder and as a memorial of Epicurus' philosophical therapy. What was to be remembered and memorialised in the Epicurean school was not only the *doctrines*, but also the *figure* of Epicurus, together with his most prominent friends and associates. This was not merely the attitude of later and overzealous followers; Epicurus himself left precise instructions to this effect in his will (Diog. Laert. 10.19).¹⁶ Memorials and images of Epicurus proliferated within the school: the Epicureans 'display images of Epicurus in their bedrooms and carry them about with them; they offer sacrifices on his birthday' (Plin. *Nat.* XXXV 5); 'I could not forget Epicurus even if I wanted: our associates have his likeness not only on panels but even on their drinking cups and rings' (Cic. *Fin.* V 3). The aim was to surround the members of the community with constant reminders of the man who not only articulated the Epicurean theories and distinctive way of life, but who also served as an exemplum of the happy life to which the Epicureans aspired.

But memory is not merely a means of preserving the Epicurean doctrines and identity; the deliberate recollection of past pleasures, including intellectual pleasures associated with philosophical inquiry and discovery, is itself essential for happiness, and remains available even in the most difficult circumstances:

- (T8) So let me remind you of what Epicurus said on his deathbed [...]: 'I am writing on the last day of my life, but a happy one. My bladder and bowels are so diseased that they could hardly be worse [...] Yet all this is counterbalanced by the joy I feel as I recall my theories and discoveries (*memoria rationum inventorumque nostrorum*).' (Cic. *Fin.* II 96; see also *Tusc.* V 76; Plut. *Non posse* 1099E, transl. Woolf)¹⁷
- (T9) Alleviation of distress, however, Epicurus finds in two directions, namely in calling the soul away from reflection upon vexation and in a recall (*revocatione*) to the consideration of pleasures. [...] The wise man's life is packed with the memory (*memoria*) of past pleasures and

¹² This passage from Philodemus' *On choices and avoidances* could be read as a criticism of the view that memory of key Epicurean doctrines is by itself *sufficient* for sagehood and happiness (see, e.g., Nijs 2004: 92–3): 'For the thesis that the understanding and memorisation of the cardinal tenets contribute greatly to actual choices and avoidances is not equal to claiming that some choices and avoidances are traced back to the states of tranquillity concerning them (sc. the cardinal tenets)—as some have clumsily interpreted it—but to claiming that they (sc. the choices and avoidances) are accomplished successfully when we measure them by the ends laid down by nature.' (XI, 7–20; Indelli, Tsouna and McKirahan transl.)

¹³ See Asmis 2001: 216–22.

¹⁴ For a rejection of the standard interpretation that Epicurean pedagogy consisted *primarily* in memorising practices, and for an attempt to reintegrate the epitomes into the pedagogical dynamics of the Epicurean community, see Braicovich 2017.

¹⁵ See Ferguson Smith 1993.

¹⁶ For discussion of the Epicureans' memorial practices, see, e.g., Clay 1998.

¹⁷ See also Diog. Laert. X 22 ('gladness of mind at the memory of our past conversations').

the prospect of future pleasures. (Cic. *Tusc.* III 33; transl. King slightly modified; see also V 74, 96)

Even ‘the memory (μνήμη) of a dead friend is pleasant in every way’ (Plut. *Non posse* 1105E), presumably insofar as it consists in recalling past pleasant experiences shared with that friend, untainted by the false belief that death is bad for us.¹⁸ Unlike the memorisation of doctrines or texts, the formation of such experiential memories is not itself deliberate; what is deliberate is the constant therapeutic choice to recall them when appropriate.

2. Are memories imprints (τύποι) in the soul?

But how are memories formed, retained and recalled? What, more precisely, are they at a physiological level? Despite the amount of evidence for Epicurean memory *practices*, discussed in the previous section, there is a striking paucity of information about the Epicureans’ *theory* of memory. This is partly due to the loss of most of the thirty-seven books of Epicurus’ *On Nature*, as well as of the works of other Greek and Roman Epicureans prior to Lucretius. Yet even Lucretius, who devotes most of the third and fourth books of his poem to the soul, its nature, and its cognitive powers, has remarkably little to say about memory, and virtually nothing about its workings. Equally puzzling, memory, whose importance was highlighted from the opening of the *Letter to Herodotus*, is not even mentioned in its summary of Epicurean ‘canonic’ (i.e. epistemology) and psychology.

According to Epicurus, the soul (ψυχή), like everything else in the universe, is a corporeal aggregate of atoms, albeit an extremely complex one. It is an especially fine-structured atomic aggregate, interspersed throughout the atomic structure of the body (see, e.g., Epic. *Her.* 63–4). The part located at the centre of the chest, the ‘mind’ (νοῦς or διάνοια; *animus* or *mens* in Lucretius’ Latin), is the seat of consciousness, emotions, deliberations, and thoughts; the rest of the soul (*anima*), distributed throughout the body, is responsible for its vital functions, sensation, and movement (see, e.g., Lucr. III 136–76). One might expect that such a materialist conception of the soul would provide an ideal framework for appropriating the established tradition of thinking of memories as traces or imprints in the soul, and for transforming what in Plato and Aristotle remained semi-metaphorical or analogical into a fully articulated physiological, atomistic theory of memory imprints. The evidence that the Epicureans in fact conceived of memory in this way is, however, indirect and elusive. This section reassesses that evidence with a sceptical eye.

The most promising piece of evidence appears to come from this report on the notion of πρόληψις, where a connection is drawn between ‘preconceptions’, memories and τύποι:

(T10) Preconception (πρόληψις), they say, is as it were a grasp, or correct opinion, or conception, or universal stored notion, namely a memory, of that which has frequently become evident externally (οἰονεὶ κατάληψιν ἢ δόξαν ὀρθὴν ἢ ἔννοιαν ἢ καθολικὴν νόησιν ἐναποκειμένην,

¹⁸ For Plutarch’s criticism of the Epicurean claim that memory of past pleasures is itself pleasant, see *Non posse* 1088E–1089A. On the question whether the prospect of obtaining full and untainted pleasures through memory is too optimistic, see Warren 2014: 196–201. For the relationship between memory and pleasure in Epicureanism, see, e.g., Giovacchini 2007.

τουτέστι μνήμην, τοῦ πολλάκις ἔξωθεν φανέντος): e.g. ‘Such and such a kind of thing is a human being.’ For as soon as ‘human being’ is uttered, immediately its outline (ὁ τύπος αὐτοῦ) also comes to mind in accordance with a preconception (κατὰ πρόληψιν), since the senses give the lead. Thus what primarily underlies each name is something self-evident. And what we inquire about we would not have inquired about if we had not had prior knowledge of it. For example: ‘Is what is standing over there a horse or a cow?’ For one must at some time have come to know the form (μορφή) of a horse and that of a cow in accordance with a preconception (κατὰ πρόληψιν). Nor would we have named something if we had not previously learnt its outline in accordance with a preconception (αὐτοῦ κατὰ πρόληψιν τὸν τύπον μαθόντες). (Diog. Laert. X 33; transl. Long and Sedley, slightly modified)

According to most interpreters, the passage claims that preconceptions¹⁹ were conceived by the Epicureans as (a type of) memories and described as τύποι. And this would not be surprising if memories were generally understood by them as imprints in the soul, along the lines of the Platonic and Aristotelian model.²⁰ The standard interpretation can be schematically reconstructed as follows:

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|--|------------------|
| (1) Preconceptions are memories | |
| (2) Preconceptions are τύποι | |
| (3) Τύποι are imprints in the soul | |
| (4) Therefore, preconceptions are imprints in the soul | From (2) and (3) |
| (5) Therefore, all memories are (plausibly) imprints in the soul | From (1) and (4) |

In support of premiss (3), a papyrus fragment of *On Nature* XXV has been taken to use the participle ἐντυπῶν (a *hapax* in Epicurus’ writings) as part of an atomistic explanation of the formation of imprints by incoming εἶδωλα upon the soul (Laursen 1995: 91). The mechanism described, however, appears to concern perception rather than memory, and the fragment is difficult to interpret. Moreover, according to Hammerstaedt (followed by Corsi 2022: 77–8), the correct reading of the papyrus is the noun τύπων, which would refer to the εἶδωλα themselves rather than to their imprints, in accordance with Epicurus’ own attested usage (see below). In any case, the lines that follow allude to some kind of modification of the structure of the soul (an ‘opening of a way’) of a different kind from the formation of a seal-like imprint.²¹

¹⁹ The concept of πρόληψις (‘preconception’ or ‘anticipation’, literally ‘prior grasp’ or ‘initial grasp’) is central to Epicurean philosophy of mind and epistemology. I will discuss it only with relation to the question of what it can teach us about the Epicurean theory of memory. For discussion of Epicurean preconceptions, see, e.g., Asmis 1984: 19–80; Glidden 1985; Morel 2008; Fine 2014: 226–56; Tsouna 2016.

²⁰ For recent illustrations of this exegetical vulgate, see, e.g., Masi (2015: 210): ‘*Tupos*, however, also possesses a specific physical meaning. In general, *tupoι* are the material residues that are impressed upon the soul by perceptual stimuli’ (see, similarly, Masi 2006 and 2014); Spinelli 2019: 284: ‘when the Epicureans speak of memory they perhaps refer to a thoroughly materialistic process, as confirmed by the use of the technical term *typos*, the mark impressed in the atomic structure of our mind/soul’; Verde m2024: 69: ‘There is no doubt that every *prolepsis* is a *typos*, a physical (i.e., atomic) mould formed on the *dianoia* (or *mens*) dependent on the confluence of several *eidola* from outside’ (see also Verde 2020 for the suggestion of a possible influence of the *Theaetetus* wax block). See also White 2021: 422 for the translation of τύπος here as ‘mental impression’.

²¹ For similar descriptions of soul changes which may be related to memories formation, see p. XXX below.

The dominant interpretation of T10's implications, according to which (5) for the Epicureans memories were imprints in the mind, might seem to find support in Lucretius, who once describes our memories of past experiences and actions as 'traces' or 'prints' (*vestigia*):

(T11) Besides, if the nature of the soul is immortal and creeps into the body as we are born, why can we not remember (*meminisse*) also the time that has passed before, and why do we keep no traces of things done (*nec vestigia gestarum rerum ulla tenemus*)? For if the power of the mind has been so greatly changed that it has lost all memory of things done (*omnis ut actarum exciderit retinentia rerum*), that, I think, is not far removed from death; therefore, you must confess that the soul that was before has perished, and that which now is has now been made. (Lucr. III 670–8; transl. Rouse and Smith, slightly modified)

Lucretius also refers to a doctrine of Epicurean physics as something 'sealed up' in memory:

(T12) This also herewith you would do well to guard sealed and treasured in memory (*obsignatum*²² ... *habere convenit et memori mandatum mente tenere*), that there is none of those things which are in plain view before us which consist only of one kind of element. (Lucr. II 581–4; transl. Rouse and Smith)

However, a careful examination of T10, set against Epicurus' own usage of the language of τύποι, does not support the hypothesis that memories were conceived as soul imprints along Platonic and Aristotelian lines.²³ To begin with, in Epicurus' *Letter to Herodotus* 46, the term τύποι refers to something extra-psychic: the fine atomic 'outlines' or 'films' constantly emitted from the surfaces of solid bodies, and retaining the same shape, which Epicurus called εἶδωλα, 'images' (Lucretius' *simulacra*).²⁴ These εἶδωλα move with extreme speed away from the objects, and whenever they enter our eyes and our soul 'focuses' upon them we perceive those objects. It is not via the medium of the air, or via rays or effluxes coming from us, that the objects 'seal' their nature upon us (49).²⁵ These atomic εἶδωλα are described as τύποι not because they are *imprints*—they clearly are not—²⁶ but because they are *outlines* reproducing the shape or structure of the objects from which they originate.

This nuance also emerges in another usage of τύπος in the *Letter to Herodotus*, including T7. There, the τύποι of the Epicurean system are its general *outlines*, the most fundamental principles that constitute the structure of the whole. It is these τύποι that are sketched in Epicurus' letters and must be carefully memorised, for the reasons already examined; it would be nonsensical to construe them as imprints in the atomic structure of our minds, not least because they must exist *prior to* any learning and memorisation of them.²⁷

²² This is possibly the Latin rendering of κατεσφραγισμένον.

²³ For an analysis of the Epicurean usage of τύποι that like mine de-emphasises the meaning of 'imprint', see Lembo 1981–2.

²⁴ See also Diog. of Oen. fr. 43, I.4 Ferguson Smith.

²⁵ This suggests that for Epicurus something is 'sealed' upon the soul in the process of perception or thought: but what is so sealed is not called τύπος or memory.

²⁶ Epicurus disagreed with Democritus, who thought that an object's εἶδωλα somehow *make impressions upon the air*, which acts as the medium for sight (see Theophr. *Sens.* 50, 1–6, with discussion in Baldes 1975; Rudolph 2011).

²⁷ See also *Her.* 68: 'So if one [...] remembers what was said at the outset, one will see the points comprehended in the outlines (τοῖς τύποις) well enough to be able to work out, from these, the precise details with

These usages of τύπος should give us reason to pause before accepting premiss (3) of the argument reconstructed above. It becomes doubtful that Epicurus would have adopted τύπος in a further and distinct sense—namely that of an atomic ‘imprint’—to characterise memories in general and preconceptions in particular.

Furthermore, a closer reading of T10 brings an even deeper difficulty to light. Epicurus never states that προλήψεις themselves *are* τύποι in the soul, *contra* premiss (2). Rather, he repeatedly insists that it is *κατὰ πρόληψιν* that the τύπος of a given thing comes to mind, is learnt, or is known. It is ‘*in accordance with*’ or ‘*by means of*’²⁸ our preconceptions that we have cognitive access to the τύποι of things, and this insistence strongly suggests that preconceptions are not themselves τύποι.²⁹ If preconceptions are, as it is reasonable to suppose, mental capacities for or acts of cognition, like the other Epicurean ‘canons’ or ‘criteria’ of truth, sensations (αἰσθήσεις) and feelings (πάθη) (Diog. Laert. X 31), then what corresponds to them or is accessed through them is better understood as their contents³⁰ or intentional objects. The three examples offered in T10, the preconceptions of a human being, a horse, and a cow, suggest that the corresponding τύποι are general, basic, and pre-theoretical *conceptual outlines*.³¹ The term ‘shape’ (μορφή) is used there as a synonym of τύπος: at least in the case of natural kinds like those exemplified in the passage, the fundamental outline will typically include, and in some cases be exhausted by, the visible shape, structure, or appearance shared by members of the kind (‘Such and such a kind of thing is a human being’).³²

Cicero’s explanation on Epicurus’ concept of πρόληψις complicates this picture:

(T13) For what human nation or race does not have, without instruction, some preconception (*anticipationem*) of the gods? Epicurus’ word for this is ‘*prolēpsis*’, that is what we may call an outline of a thing (*quandam informationem*), preconceived by the mind (*anteceptam animo*), without which understanding, inquiry and discussion are impossible. [...] For as well as giving

certainty.’ Damiani 2021 translates τύποι as ‘impronte’ (‘imprints’), but understands an ‘imprint’ as anything that reflects in overall shape, albeit not in the details, its ‘model’ (2021: 50).

²⁸ Hicks: ‘by an act of’, ‘by way of’; Glidden: ‘because of’; Atherton: ‘in connection with’; Long and Sedley: ‘by means of’; Inwood and Gerson: ‘according to’; White: ‘by virtue of’; Morel: ‘in virtue of’.

²⁹ For a clear formulation of the point see Morel 2008: 41–2. *Contra* Tsouna 2016: 164: ‘Learning the pattern of a man “by way of preconception” (*kata prolēpsin*) might appear to indicate that the *prolēpsis* of man and the *tupos* of man are distinct items. But, in fact, most sources suggest that these latter constitute one single item, which has both a conceptual aspect and an imagistic aspect. In other words, the *tupos*, pattern or image, *is* the preconception, or rather an aspect of it [...] Psychologically, the preconception is a sort of memory (*mnēmē*) of something external, which one has experienced many times in the past.’

³⁰ See Morel (2008: 42): ‘the τύπος—the manifestation of which occurs in virtue of preconception—is the actualization or the putting in place of the content of the preconception’. Atherton (2009: 201) compares the role of τύποι to that of ‘intensions’. For the idea that the τύποι, as representations of the general characteristics of things, are ‘products’ of the preconceptions, which are processes of recognition, see Németh 2017.

³¹ For the view that preconceptions do not give us access to conceptual outlines, but are pre-conceptual capacities, acquired through memory and experience, for recognising and discriminating general perceptual outlines of things, for example natural kinds, see Glidden 1985.

³² See also Sext. Emp. *M* VII 267, for a similar report about the concept (ἐπίνοια) of human being: ‘The Epicureans thought that the concept of the human being could be presented ostensively, saying “a human being is a shape (μορφώμα) like this, along with the possession of soul.”’ For the connection between ἐπίνοια and τύπος, see Epic. *Her.* 44–5: ‘There is no principle for these, since the atoms and the void are eternal. If all these points are remembered, a maxim as brief as this will provide an adequate outline of our concept of the nature of what exists (τὸν ἰκανὸν τύπον ὑποβάλλει τῆς τῶν ὄντων φύσεως ἐπίνοιας).’ The τύπος is not a memory or an imprint, but the general outline of a certain concept expressed through a maxim preserved in memory.

an outline (*informationem*) of the gods themselves, nature has also engraved (*insculpsit*) in our minds the view of them as everlasting and blessed. (Cic. *Nat. deor.* I 43–5)

Cicero’s wording may suggest that προλήψεις are themselves τύποι, that is, items that can be ‘engraved’ in the mind. However, Cicero is elucidating rather than reporting Epicurean doctrine. A preconception is described as ‘what *we* may call’ an *informatio*, and while *informatio* could be Cicero’s rendering of τύπος, this is not required (the occurrence at *Orat.* II 358 does not compel such reading, and *informatio* may instead be connected more generally to εἶδος or μορφή). Moreover, Cicero may be conflating Epicurean preconceptions with what we think of through them, in a way that fails to reflect Epicurus’ nuanced language in T10. It remains true, however, that the gods’ everlastingness and blessedness, which are central to the Epicurean understanding of our preconception of gods, are described by Cicero as *engraved* in the mind.

Another question to be raised is the following. Can what we know about Epicurean preconceptions in fact help us reconstruct the Epicurean theory of memory? We should be cautious about accepting premiss (1), that a πρόληψις was considered or called a memory by the Epicureans, as is often assumed.³³ Such a description is not attested elsewhere, including in Epicurus’ discussion of the ‘first notions’ (πρῶτα ἐννοήματα) in the *Letter to Herodotus* 37–8, which are either the same as or closely related to preconceptions. The list in T10, introduced by οἷονεὶ (‘as it were’), may reflect an attempt by Diogenes’ source to explicate the Epicurean notion of πρόληψις by means of a cluster of partially overlapping concepts, some of which are unlikely to be Epicurean (for example, κατάληψις, which has a distinctive Stoic flavour).³⁴ Indeed, the Stoics themselves, who incorporated preconceptions into their psychology and epistemology, held that memory is required for the formation of preconceptions, but that preconceptions are not themselves memories (Aëtius IV 11, 1–3).

Even if one grants, for the sake of argument, that for the Epicureans preconceptions were memories, it does not follow that all memories were preconceptions. Accordingly, any conclusions about the physiology of preconceptions cannot be straightforwardly extended to memory as such. Even if προλήψεις were material imprints that somehow represent or encode conceptual outlines, it would not follow that all memories are thereby τύποι, let alone τύποι understood as seal-style imprints. Consider, for example, a highly detailed memory of the individual Socrates, as he looked and acted at a particular time, as opposed to the generic preconception of a human being: it would be counterintuitive to describe the former as a τύπος in the same sense. The same difficulty arises with the memory of Epicurean doctrines: if the fundamental outlines count as τύποι, how could memories of the precise and technical details of the system, accessible only to experts, be characterised in the same way?

Taken together, these considerations substantially weaken the case for identifying Epicurean memories with imprints in the atomic structure of the mind. An alternative and more promising model, I suggest, is hinted at by the Epicurean account of imagination and dreaming. This is a well-attested part of Epicurean philosophy of mind: in addition to the εἶδωλα that, by interacting with the soul-atoms in our eyes, cause us to see, Epicurus posits even finer and more

³³ See, e.g., Glidden 1985: 182–6; Asmis 1984: 63–4; 2009: 89–90; Tsouana 2016: 164.

³⁴ For analysis of the Stoic pedigree of the items in the list, and how they resemble Epicurean preconceptions, see, e.g., Németh 2017: 34–6.

mobile atomic images that penetrate directly to the mind, bypassing sense organs and the soul-atoms within them. These images are involved in imagination, hallucinations and dreams (see, e.g., Epic. *Her.* 50–1; Lucr. IV 722–822). Whereas some of these images derive from existing objects, as visual εἶδωλα do, others are formed spontaneously in mid-air, or arise from the collision and fusion of multiple images (e.g., the image of a centaur, combining images of a human being and a horse). The following two passages add further detail on how these images reach the mind:

- (T14) Now the images that flow from objects, by impinging on our eyes, cause us both to see the external realities and [...] The soul receives in turn the things seen by the eyes and after the impingements of the original images, our nature is rendered porous (ποροποιεῖται) in such a way that, even when the objects which we originally saw are no longer present, images similar to the original ones are received by the mind [creating] visions [both when we are awake] and in sleep. (Diog. Oen. fr. 9, II 9–IV 2 Ferguson Smith, transl. slightly modified)
- (T15) And whenever men have given constant attention to the games through many days on end, we usually see that, even when they have ceased to observe all this with their senses, yet certain passages (*vias*) are left open in their minds, by which the images of the same things can come in [...] so that even while awake they think they see dancers swaying their supple limbs, and hear with their ears the lyre’s rippling tune. (Lucr. IV 973–81; transl. Rouse and Smith, slightly modified)

Our past experiences, caused by the impact of εἶδωλα (or other atomic effluences, like in the case of hearing) upon our senses and soul, alter the structure of our mind, creating ‘pores’ or opening ‘passages’ through which similar but finer, non-visual εἶδωλα can subsequently ‘flow in’.³⁵ This explains why we are more likely to imagine or dream of things frequently experienced in the past, especially in the recent past: the relevant images can flow all the way in and become available to our mind’s attention. In some cases, this act of attention or ‘focusing of the mind’ (ἐπιβολὴ τῆς διανοίας) is conscious and voluntary, as when one deliberately imagines something; in others, it is not, as illustrated by Lucretius’ examples of ‘image loops’ or ‘earworms’. T14 and T15 do not concern memory, but imagination-type experiences that occur both when awake and when dreaming. It is nevertheless plausible to conjecture that, for the Epicureans, memory operated according to a similar mechanism. On this view, acquiring a memory would not consist in forming and retaining an internal seal-like imprint, but rather in acquiring a certain disposition, as the result of a change in the atomic structure of the mind, that later allows analogous images to reach our mind and become available to its acts of attention. Acts of remembering will occur when our mind focuses on such incoming images. Remembering is not a matter of ‘looking inward’ at stored imprints.

This proposal was sketched in outline by David Sedley in his interpretation of the Epicurean ‘focusing of the mind’: ‘The chief function of the ἐπιβολὴ τῆς διανοίας must be in the field of memory. If Epicurus were to regard memory as an event purely internal to the mind, the whole empirical foundation of knowledge would crumble, since our “memories” might be nothing more than our own inventions. The objectivity of memory is superficially rescued by

³⁵ For discussion of the ‘pores’ in the atomic structure of the mind, and of T14 and T15, see, e.g., Corsi 2022: 73–88.

the assurance that the mind, like the sense-organs, draws its images from outside' (1973: 23).³⁶ Sedley holds that T14 and T15 do concern memory, and offer an explanation of why 'the images of memory have easier access to the mind, and thus occur to it with greater clarity and consistency, than those of mere imagination': 'the original visual image of an object imprints its pattern³⁷ in the atoms of the mind in such a way that memory-images of the same object immediately "lock in" to it and are thus identified' (24).

It should be noted, however, that the phenomena described by Lucretius in T15 are not presented as acts of remembering, nor should they count as such unless we stretch the concept of memory too far. The most natural interpretation of T14, read in the context of the entire fragment 9 Ferguson Smith, is that Diogenes is referring to imagination (possibly including hallucination) and dreaming, rather than memory. Nonetheless, there are compelling reasons to conjecture that the Epicureans extended to memory a mechanism analogous to that of imagination and dreaming, itself structurally parallel to that of sensation, and especially vision. Such a model would integrate memory more coherently within Epicurean psychology, avoiding the anomaly of treating memory as the *sole* form of cognition not involving contact with any external 'existing' object.³⁸ It would be especially surprising if the Epicureans had held that memory functions exclusively on the basis of internal traces or imprints, given their refusal to adopt such a model for dreams, hallucinations, and other para-perceptual phenomena like those described in T15. Furthermore, this model draws a sharper distinction between the formation and retention of memories—understood as complex changes or motions in mind's structure—and the acts of remembering enabled by that resulting disposition.

What kind of changes in the structure of the mind could, for the Epicureans, have corresponded to the formation of memories? The idea of 'pores' or 'passages' being opened as a result of the original sense-experience may have some plausibility in the case of perceptual memories. The same mechanism might even account for the acquisition of preconceptions, whether or not the Epicureans themselves ever classified preconceptions as memories.³⁹ Epicurus' choice of the term τύπος to denote the conceptual outline that is the content of a preconception would have been especially apt if thinking of such an outline *is* in fact to come in contact with, and focus our attention on, an atomic τύπος/image that is 'out there' (and *not* imprinted in us), in a manner analogous to sensation, imagination and dreaming.

Such an explanation, however, is unlikely to work for something as complex as memorising even the most basic Epicurean doctrines, such as 'the principles of bodies must be atomic natures' (Epic. *Her.* 41), or 'the standard of our actions are the feelings of both pleasure and pain' (Diog. Oen. fr. 70 Ferguson Smith). What atomic images would need to fly into our minds from outside whenever we recall that 'death is nothing to us'?⁴⁰ Yet the internal imprints

³⁶ See also Long and Sedley 1987: 77–8.

³⁷ The language of 'imprinting' should not be interpreted as a relapse into the seal-imprints model, since the 'imprinted patterns' must be understood by Sedley as the passages or pores left open in the atomic structure of the mind.

³⁸ Or, at least, the only one in this set: 'empty opining' (κενοδοξία) fails to get in touch with any reality.

³⁹ Asmis offers a similar account of how *concepts* are 'stored' in the soul: 'what makes concepts "stored" is the ability of the mind to select images at will from an ever-changing stream of images' (1984: 63).

⁴⁰ Several fragments from Epicurus' *On Nature* XXV mention some 'affection' (πάθος) or 'motion' (κίνησις) that is 'analogous' (ἀνάλογος/-ον) to memory and remembering—including, perhaps, to the memory of key Epicurean doctrines. One may conjecture that these are the complex series of atomic motions and the resulting re-arrangements and dispositions of the mind's structure that underlie the formation, retention and recall of memories

model fares no better on this score, unless one stretches the Platonic and Aristotelian language of memory imprints as copies of the external objects to cover symbolic ‘encodings’ of non-perceptual contents. One might well wonder whether so different types of memory such as the memory of what a person’s face looks like and the memory of a highly abstract philosophical doctrine could ever be satisfactorily explained by a single mechanism.

Memories were described by the Stoics as ‘imprintings’ (τυπώσεις) in the soul (see, e.g., Plut. *Comm. not.* 1085A). While Cleanthes interpreted these literally as ‘imprints’ in the form of hollows and projections (κατ’ ἐξοχήν καὶ εἰσοχήν), fully appropriating the Platonic seals-on-wax model (Sext. *Emp. M VII 372*), Chrysippus preferred to speak of physical *alterations* (ἐτεροιώσεις) (*M VII 230*), on account of the fact that soul *pneuma* is too fluid to receive imprints, and that the ‘governing part’ of the soul would otherwise face overcrowding and superimposition (*PH II 70*).⁴¹ On the reconstruction of Epicurus’ physiology of memory proposed here, Epicurus would stand closer to Chrysippus than to Plato, Aristotle, and Cleanthes—while of course adopting a different atomistic account of the soul’s material constitution.

This Lucretian passage could pose a challenge to the conjectural reconstruction advanced here:

(T16) Nor is there any other reason why the mind is awake, when sleep has relaxed the limbs, except that these same images assail our minds then, as when we are awake, that we seem surely to see him who has left his life, and is holden by death and dust. Nature compels this to happen, because all the senses of the body are obstructed and at rest throughout the limbs, nor can they refute the false by the true. Moreover, memory lies at rest, and is torpid in slumber, nor does it urge in contradiction that he has long ago since been in the power of death and destruction whom the mind believes itself to see alive. (Lucr. IV 757–67, transl. Rouse and Smith, slightly modified)

Here the permeability of the mind’s atomic structure, which allows images of dead people to flow in when we are asleep, is distinguished from memory. We are told that, if memory were awake and active, it would inform the mind that the person had long since died, and the mind would not be deceived into falsely believing, in the dream, that the person is present.⁴² Yet this is puzzling, since the very possibility of dreaming, for example, of a dead friend seems to presuppose the retention of the memory of that friend, suggesting that memory should in some sense be involved in dreaming.

The blow is not fatal, however. One response would be to suggest that during sleep our memory is not wholly inert, but only partially operative. For example, it may permit our mind to receive a certain image and (mis-)recognise it as the image of our friend, while failing to recall a relevant past fact, that our friend died long ago: sleep makes our memory ‘selectively

(see Masi 2006: 164), but there is no evidence that these were referred to as τύποι. For an attempt to reconstruct Epicurus’ ‘aetiology’ of memory on the basis of the few fragmentary references to memory in *On Nature XXV*, see Masi 2006: 162–74. For the association of memory with *motions* of the mind, see Lucr. III 1040: ‘Democritus, again, when ripe old age warned him that the mindful motions of the mind (*memores motus mentis*) were beginning to fail, of his own free will himself offered his head to death’.

⁴¹ Some of Chrysippus’ arguments were reprised by the critics of the Stoics (Plutarch, Sextus, Plotinus) later in antiquity and his ‘solution’ was judged insufficient (see Ierodiakonou 2007).

⁴² As Lucretius comments, if they were active the senses would also counter the formation of the incorrect belief.

unreliable'. This, however, is not Lucretius' own explanation in T16, and raises the further problem of how a single mechanism could explain both the capacity to remember a person and the capacity to remember either a past experience of that person (having seen them die) or a past fact about that them (that they died).⁴³ An alternative response is to draw a sharper distinction between memory and the mere capacity for thinking of something. Merely thinking (imagining, dreaming) of something need not involve memory at all, even if it depends causally on past experiences and the changes they effected in the soul. Remembering, by contrast, is a *specific* way of thinking of something *as past*; it requires that the mind focus on incoming images in a particular, temporally-indexed way, locating their content in the past, unlike the 'present-ness' of imagination, hallucination, or dreaming. This would be analogous to the way in which Aristotle distinguished memory from imagination (φαντασία) in his *De memoria*.⁴⁴

3. Conclusion

I believe that our re-examination of the evidence supports a cautious aporetic stance towards our prospects for reconstructing the Epicurean physiology of memory. We risk projecting onto sparse and faint *vestigia* expectations we bring with us about the likely roots of the Epicurean theory. These expectations are shaped by what we know about Plato's, Aristotle's, and the Stoics' use of the language and imagery of memory imprints, as well as by the assumption that a materialist such as Epicurus, working within that tradition, would naturally have conceived of memory along similar lines. I hope that further investigation of the alternative interpretation I have advanced here—which had not been unexplored, but deserves more attention and further development—may prove fruitful. If that interpretation were on the right track, a pressing question, which can only be raised here, is *why* Epicurus would have wanted to abandon the seal-imprints model rooted in Plato, Aristotle, and the early Stoics. Sedley's hypothesis that this choice was driven by epistemological concerns merely relocates the difficulty, prompting the further question why Epicurus would have adopted the philosophically puzzling assumption that a form of physical hyper-realism about the direct objects of all our acts of cognition would carry positive epistemological implications.

I conclude with some observations on the remarkably broad scope of Epicurean memory, which may also bear, indirectly, on this question. As noted in Section 1, both Epicurus and later Epicureans assigned memory a central role in Epicurean life. The deliberate and careful memorisation and recall of Epicurean doctrines, together with the cultivation of memory in daily practice, were regarded as essential to happiness and as integral to shaping and sustaining one's Epicurean identity. One fascinating passage in Lucretius (III 843–61), which I cannot discuss here, envisages a thought experiment suggesting that the uninterrupted persistence of our individual memories was deemed necessary for our *personal* identity over time,⁴⁵ or at least for how far our own self-identification and self-concern should extend.⁴⁶

⁴³ Remembering such a past fact would not require having experienced it; having come to believe that it occurred, for example, by trusting reliable witnesses, would be sufficient for remembering.

⁴⁴ See, e.g., King 2009; Castagnoli 2019.

⁴⁵ See, e.g., Alberti 1990; Schiesaro 1996; Sorabji 2006. For a similar idea, see also T10 above.

⁴⁶ See, e.g., Furley 1986; Warren 2001.

Corresponding to this varied Epicurean use of memory language, our sources mention a variety of actual or potential objects of memory:

- (1) past experiences, including our past actions: see, e.g., T10; Diog. Laert. X 22 (past conversations)
- (2) past pleasures (i.e. past pleasant experiences): see, e.g., T8; Plut. *Non posse* 1099E
- (3) things experienced in the past: see, e.g., Plut. *Non posse* 1105E (a dead friend)
- (4) past events and facts about the past: see, e.g., T16 (that a person died long ago)
- (5) conceptual outlines (*if* preconceptions were regarded as memories): see T10
- (6) philosophical doctrines: see, e.g., T5, T6, T7, T8 (see also *Pyth.* 95: the method of multiple explanations; Diog. Oen. fr. 70 Ferguson Smith); philosophical accounts: see, e.g., *Pyth.* 84–5; philosophical writings: see, e.g., T5.

These cut across categories that contemporary philosophers and cognitive psychologists treat as distinct: ‘episodic’, ‘personal’ or ‘experiential memory’ (1-3), ‘factual’ or ‘propositional’ memory (4 and 6), and ‘semantic’ memory (5).⁴⁷

Would some or all of these forms of memory have counted as knowledge for the Epicureans? Answering this question is complicated by the fact that the concept of knowledge is not foregrounded in Epicurean epistemology. As discussed in Section 1, memorisation of Epicurean doctrines and writings could contribute to what we would naturally describe as knowledge and understanding. Yet the central concept of Epicurean epistemology is the different one of the ‘canons’ of truth, the self-evident and reliable criteria by which we test the truth of every belief. Unlike sensations and feelings, memories are not listed by our sources among Epicurus’ canons—except, perhaps, for preconceptions, *if* these were themselves regarded as memories, something about which I have raised doubts above. Later Epicureans added the ‘focusings of the mind’ (ἐπιβολαί τῆς διανοίας) to the canons (Diog. Laert. X 31),⁴⁸ and I have conjectured that such focusings might be involved in acts of recalling.

Even if memories were not canons of truth, was remembering at least factive and truth-entailing for the Epicureans?⁴⁹ According to Diog. Laert. X 31, Epicurean sensation qualifies as a canon exactly because it is ‘non-rational’ (ἄλογός) and ‘*un-remembering*’ (μνήμης οὐδεμιᾶς δεκτικῆ). That might suggest that memory is aligned instead with reason (λόγος) and belief (δόξα), the domains in which error and falsehood first arise.⁵⁰ However, if the retention of a number of similar sense-experiences was involved in the formation of preconceptions, as seems likely,⁵¹ then at least this type of memory, which precedes pre-

⁴⁷ For these distinctions, see, e.g., Sutton 2010.

⁴⁸ See Epicurus’ *Principal Doctrine* 24 for a likely inspiration for this addition.

⁴⁹ The language of memory is predominantly factive in ancient Greek and Latin. On the Stoics’ conception, memory appears to be factive and truth-entailing (see, e.g. Castagnoli 2026).

⁵⁰ Memories could be, however, a subset of *doxai* that are true. Asmis, who believes that preconceptions are memories, thinks that preconceptions (and by implication memories) are ‘non-rational’: although the mind is not passive but focuses upon the appearances attending to their differences and similarities, it does not ‘add any information’, which is the hallmark of the formation of opinions (2019: 90). The early Epicurean Hermarchus denied that animals have *logos*, attributing to them only ‘irrational memory’ (Porph. *Abst.* I 7–12).

⁵¹ This is not explicit in the Epicurean sources, but is how the Stoics saw the role of memory, according to Aëtius IV 11, 1–3: ‘The Stoics say that when a person is born the leading part of their soul is like a blank papyrus sheet well adapted for writing upon [...]. For when people have perceived something e.g. white, once the thing has passed away, they have a memory of it. But when many similar memories come to be, we say that they have experience (ὅταν δὲ ὁμοειδεῖς πολλὰ μνημαὶ γένωνται, τότε φημὲν ἔχειν ἐμπειρίαν) – for experience is a group

conceptions, would have to be self-evident and criterial, otherwise it could not serve as a reliable bridge between sensations and preconceptions.

The range and diversity of Epicurean memory raises the question, again, whether all instances of memory could be explained through a single physiological mechanism. Contemporary neurophysiology would resist such a unifying account, and given the centrality of multiple explanations in Epicurean philosophy of science, they may well have accepted that not all types of memory could be explained in the same way. At a minimum, however, it is plausible to expect that, in the framework of Epicurean psychology, some alteration of the soul's structure, involving some movement and re-configuration of atoms, would underlie all memory formation, retention and recalling. The fact that the Epicureans wanted to include our grasp and understanding of abstract philosophical doctrines under the heading of memory could explain why they would have abandoned the more narrowly perceptual model of 'imprints' in the soul, at least for some kinds of memory. Acquiring certain concepts and coming to remember and know Epicurus' true *physiologia* effects a radical transformation in our ways of thinking, feeling, and living. Such transformation is better understood as the result of a complex and dynamic atomic restructuring of the mind, resulting in the acquisition of new cognitive capacities, rather than as the passive accumulation of discrete and static memory imprints stored away in an internal repository.

References

- Agócs, P., 2019, *Speaking in the Wax Tablets of Memory*, in L. Castagnoli and P. Ceccarelli (eds.), *Greek Memories: Theories and Practices*, Cambridge University Press, Cambridge: 69–90.
- Alberti, A., 1990, *Paura della morte e identità personale nell'epicureismo*, in A. Alberti (ed.), *Logica, mente, persona*, Olschki, Florence: 151–206.
- Asmis, R., 1984, *Epicurus' Scientific Method*, Cornell University Press, Ithaca and London.
- Asmis, E., 2001, *Basic education in Epicureanism*, in Y. L. Too (ed.), *Education in Greek and Roman Antiquity*, Brill, Leiden, Boston and Köln: 209–39.
- Asmis, E., 2009, *Epicurean Empiricism*, in J. Warren (ed.), *The Cambridge Companion to Epicureanism*, Cambridge University Press, Cambridge: 84–104.
- Atherton, E., 2009, *Epicurean Philosophy of Language*, in J. Warren (ed.), *The Cambridge Companion to Epicureanism*, Cambridge University Press, Cambridge: 197–215.
- Braicovich, R. S., 2017, *La memorización de las epitomes en la comunidad epicúrea y la redefinición filosófica*, «Archai» 21: 127–57.

of similar impressions. So some of our conceptions come about naturally and without expertise, in the ways mentioned; but others now by our own instruction and concern. The latter are just called conceptions (ἔννοιαι), while the former are also called preconceptions (προλήψεις).’ See Aristot. *APo.* II 19, 100a for the analogous function played by memory in the formation of ἐμπειρία.

- Baldes, R. W., 1975, *Democritus on Visual Perception: Two Theories or One?*, «Phronesis» 20: 93–105.
- Castagnoli, L., 2019, *Is Memory of the Past? Aristotle on the Objects of Memory*, in L. Castagnoli and P. Ceccarelli (eds.), *Greek Memories: Theories and Practices*, Cambridge University Press, Cambridge: 236–55.
- Castagnoli, L., 2020, *Ideas: Philosophy, Religion and History*, in B. Dignas (ed.), *A Cultural History of Memory in the Age of Antiquity*, Bloomsbury, London: 83–100.
- Castagnoli, L., 2026, *Un scepticisme à l'égard de la mémoire ? L'Académie hellénistique sur la mémoire, la croyance et la connaissance*, *Philonsorbonne* 20.
- Clay, D., 1998, *Paradosis and Survival: Three Chapters in the History of Epicurean Philosophy*, University of Michigan Press, Ann Arbor (Mich.).
- Corsi, F. G., 2022, *Epistemologia e Scienza della Natura in Diogene di Enoanda*, Centro Internazionale per lo Studio dei Papiri Ercolanesi, Napoli.
- Damiani, V., 2021, *La Kompendienliteratur nella scuola di Epicuro: forme, funzioni, contesto*, De Gruyter, Berlin and Boston.
- Ferguson Smith, M., 1993, *Diogenes of Oinoanda, The Epicurean Inscription*, Bibliopolis, Naples.
- Fine, G., 2014, *The Possibility of Inquiry: Meno's Paradox from Socrates to Sextus*, Oxford University Press, Oxford: ch. 8.
- Furley, D., 1986, *Nothing to Us?*, in M. Schofield and G. Striker (eds.), *The Norms of Nature: Studies in Hellenistic Ethics*, Cambridge University Press, Cambridge: 75–91.
- Giovacchini, J., 2007, *Le souvenir des plaisirs: le rôle de la mémoire dans la thérapeutique épicurienne*, in L. Boulègue and C. Lévy (eds.), *Hédonismes: penser et dire le plaisir dans l'Antiquité et à la Renaissance*, Septentrion, Lille: 69–83
- Glidden, D., 1985, *Epicurean Prolepsis*, «Oxford Studies in Ancient Philosophy» 3: 175–217.
- Gonzales, F., 2007, *Wax Tablets, Aviaries, or Imaginary Pregnancies?*, «Etudes platoniciennes» 4: 273–93.
- Havelock, E. A., 1963, *Preface to Plato*, Harvard University Press, Cambridge (Mass.).
- Havelock, E. A., 1982, *The Literate Revolution in Greece and its Cultural Consequences*. Princeton University Press, Princeton.
- Ierodiakonou, K., 2007, *The Stoics and the Sceptics on Memory*, in M. M. Sassi (ed.), *Tracce nella mente: teorie della memoria da Platone ai moderni*, Edizioni della Normale, Pisa: 47–65.
- King, R. A. H., 2009, *Aristotle and Plotinus on Memory*, De Gruyter, Berlin and New York.
- King, R. A. H., 2019, *Memory and Recollection in Plato's Philebus: Use and Definitions*, in L. Castagnoli and P. Ceccarelli (eds.), *Greek Memories: Theories and Practices*, Cambridge University Press, Cambridge: 216–35.
- Laursen, S., 1995, *The Early Parts of Epicurus, On Nature, 25th Book*, «Cronache Ercolanesi» 25: 5–109.
- Lembo, D., 1981–1982, *TYPOS e SYMPATHEIA in Epicuro*, «Annali della Facoltà di Lettere e Filosofia dell'Università di Napoli» 24:17–67.

- Long, A. A. and Sedley, D. N., 1987, *The Hellenistic Philosophers*, 2 vols, Cambridge University Press, Cambridge.
- Masi, F. G., 2006, *Epicuro e la filosofia delle mente. Il XXV libro dell'opera Sulla Natura*, Academia Verlag, Sankt Augustin.
- Masi, F. G., 2014, *Gli atomi ricordano? Fisicalismo e memoria nella psicologia di Epicuro*, «Antiquorum Philosophia» 8: 121–41.
- Masi, F., 2015, *Memory, Self and Self-determination: The Mind-body Relation in Epicurus' Psychology*, in D. De Brasi and S. Föllinger (eds.), *Anthropologie in Antike und Gegenwart: Biologische und philosophische Entwürfe vom Menschen*, Karl Alber, Freiburg: 203–30.
- Morel, P.-M., 2008, *Method and Evidence: On Epicurean Preconception*, «Proceedings of the Boston Area Colloquium in Ancient Philosophy» 23: 25–48.
- Morel, P.-M., 2024, *Epicurean Akribeia*, in F. Masi, P.-M. Morel, and F. Verde (eds.), *Epicureanism and Scientific Debates: Epicurean Tradition and Its Ancient Reception. Volume II: Epistemology and Ethics*, Leuven University Press, Leuven: 25–45.
- Németh, A., 2017, *Epicurus on the Self*, Routledge, London and New York.
- Nijs, W., 2024, *The Epicurean Sage in the Ethics of Philodemus*, Brill, Leiden.
- Rudolph, K., 2011, *Democritus' Perspectival Theory of Vision*, «Journal of Hellenic Studies» 131: 67–83.
- Schiesaro, A., 1996, *La 'palingenesi' nel De Rerum Natura*, in G. Giannantoni and M. Gigante (eds.), *Epicureismo Greco e Romano*, Bibliopolis, Naples: vol. II, 795–804.
- Scott, D., 1995, *Recollection and Experience: Plato's Theory of Learning and Its Successors*, Cambridge University Press, Cambridge.
- Sedley, D. N., 1973, *Epicurus, On Nature Book XXVIII*, «Cronache Ercolanesi» 3: 5–83.
- Sedley, D. N., 2004, *The Midwife of Platonism: Text and Subtext in Plato's Theaetetus*, Clarendon Press, Oxford.
- Small, J. P., 1997, *Wax Tablets of the Mind: Cognitive Studies of Memory and Literacy in Classical Antiquity*, Routledge, London and New York.
- Sorabji, R., 2006, *Self: Ancient and Modern Insights About Individuality, Life, and Death*, University of Chicago Press, Chicago.
- Spinelli, E., 2019, *Physiologia medicans: The Epicurean Road to Happiness*, in L. Castagnoli and P. Ceccarelli (eds.), *Greek Memories: Theories and Practices*, Cambridge University Press, Cambridge: 278–91.
- Sutton, J., 2010, 'Memory', in E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy (Summer 2010 Edition)*, available at <http://plato.stanford.edu/archives/sum2010/entries/memory/>.
- Thomas, R., 1992, *Literacy and Orality in Ancient Greece*, Cambridge University Press, Cambridge.
- Tsouana, V., 2016, *Epicurean Preconceptions*, «Phronesis» 61: 160–221.
- Verde, F., 2020, *L'epistemologia di Epicuro e il Teeteto di Platone*, «Historia Philosophica» 18: 13–44.

Verde, F., 2024, *To prosmenon: Epicurus' Propositional Theory of Truth*, in F. Masi, P.-M. Morel, and F. Verde (eds.), *Epicureanism and Scientific Debates: Epicurean Tradition and Its Ancient Reception. Volume II: Epistemology and Ethics*. Leuven University Press, Leuven: 67–81.

Warren, J., 2001, *Lucretian palingenesis recycled*, «Classical Quarterly» 51: 499–508.

Warren, J., 2014, *The Pleasures of Reason in Plato, Aristotle, and the Hellenistic Hedonists*, Cambridge University Press, Cambridge.

White, S., 2021, *Diogenes Laertius: Lives of Eminent Philosophers*, Cambridge University Press, Cambridge.