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LUCRETIUS' TRANSLATION OF GREEK PHILOSOPHY

by

DISKIN WILLIAM CLAY

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of the requirements for the degree of

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Introduction

Within the prospect of world history, Lucretius saw himself as the first Roman among others who were beginning to make the attempt capable of translating the newly discovered truths of nature into Latin. Writing in prose and only a decade after Lucretius' death, Cicero gives his readers a similar impression for the whole of philosophy. His terms lack Lucretius' temporal sweep, but in another sense they are more inclusive: "philosophy did not stir until this age, nor had it any glory in Latin letters" (Tusc. I 5). From this time onward, Cicero's voice is the only one heard. His silence on Lucretius' place in the formation of Latin as a language capable of expressing the concepts of Greek philosophy is a silence extending throughout Antiquity and into the XIX century. From the time of his death, Cicero's claim to originality finds only echoes. Nepos writes that Cicero shaped by his style a Latin philosophy which had been crude before him (fr. 3 Winstedt).

Plutarch (Cicero 40) characterizes the work on his last years as in part an attempt to render the terms of Greek logic and physics into Latin. Among those terms which Plutarch believed¹ were first translated into Latin by Cicero, the reader discovers phantasia, atomos, ameres, and kenon; all of these terms have their equivalents in the De Rerum Natura. And Augustine (contra Ac. I 8) gives echo to Nepos' judgment and speaks of Cicero as the man who formed and perfected philosophy in Latin. So too Antoine Meillet. In the long run, Nepos, Plutarch, Augustine, Meillet and others are right.

The explanation for the complete ancient disregard of Lucretius' effort

to find Latin expressions for the conceptions of Greek physics is that Lucretius was a poet and his diction - including his equivalents for the Greek of Epicurus and Empedocles - was poetic. It was transmitted in the poetry of his imitators, but it seems to have played no considerable role in prose. His remarks on the poverty of his native tongue are quoted by writers encountering the difficulty of translating from Greek into Latin (Seneca, Pliny), but his solutions to these problems do not survive as such in Latin literature.

The reasons why Lucretius' vocabulary failed to penetrate into oratio soluta are more complex than the narrow categories of ancient genres. Quite obviously Epicurean physics had no interpreter in Latin after Lucretius, and thus he had no continuators in Latin until the revival of corpuscular philosophy by Pierre Gassendi in the mid-XVII century. Even then precious few of Lucretius' terms carry over into Gassendi's technical vocabulary, and what agreements there are, are most probably coincidence.

Another reason is not far to seek. Cicero claimed for himself Latin formations which go back to Lucretius² and a position in order of time to which Lucretius had a better title. As long as Cicero was read and Lucretius was not, it was inevitable that Lucretius' place in the history of Latin philosophy should have been forgotten along with pre-Ciceronian literature which is now lost to us. Even now when Lucretius is widely read, his attempt to bring the obscure discoveries of the Greeks over into Latin is lost sight of for the encyclopedic activity of Cicero. Overshadowed too are the names of Varro, Valerius Soranus, C. Catus, L. Saufeius, Rabirius and Amafinius. With the except of Varro, it is fair to say that these are only names. But, by some fallacy of duration, it

is no longer possible (with the exception of his translation of the Timaeus)³ to judge Cicero's translations against their original, while Lucretius' originals survive in sufficient quantity to make such a judgment possible.

Lucretius' attempt to express the Epicurean and Greek doctrines on the physical world in Latin was no failure because he did not succeed in expressing them with clarity; rather he failed because he was not able to impress his means of expression on Romans who wrote philosophy. His poetry seemed too sweet a coating, his philosophy too bitter a draught.

A study of this attempt promises a better understanding of Lucretius' philosophical poem and a fairer appreciation of the dimensions of the task he set himself. The study presented in the following pages is not the first such treatment of Lucretius' philosophical vocabulary. This has been the subject of intensive interpretation and, since the edition and commentary of the De Rerum Natura of H. A. J. Munro (1864), interpretation has oriented itself by the compass of Epicurus' Greek. Extensive analyses of Lucretius' technical vocabulary - which is a thing inseparable from the argument and substance of his poem - have been made by J. Woltjer (1877), K. C. Reiley (1909), F. Peters (1926)⁴, and A. Traglia (1947) whose Latin treatise now represents the most useful exposition of Lucretius' technical terms in brief compass.

The studies presented here center themselves on the first two books of the De Rerum Natura and, since I find it meaningless to speak of translation without an original, they begin with a confrontation of Epicurus' Greek with Lucretius' Latin (Chapter II). Since Lucretius' original (where this original can be determined) proves to be what Epicurus characterizes as the stoicheiomata

(or fundamental propositions) of his physics, I have turned to the whole of the De Rerum Natura and Epicurus' Physics itself in the attempt to demonstrate Lucretius' usually keen awareness of what these propositions prepare for. Throughout this study I have tried not to lose sight of a truth so obvious that it is often seen but seldom observed: Lucretius was a poet and an Epicurean, and these two terms reveal the inner laws of his translation.

CHAPTER I

The Epicurean Background

Philosophia iacuit usque ad hanc aetatem
nec ullum habuit lumen litterarum Latinarum.
Cicero, Tusc. I 5

(I)

Lucretius was not the only Epicurean to write philosophy in Latin, and there were other Epicureans, both Greek and Roman, who wrote poetry.¹ But Lucretius was the only Roman to attempt to expound the philosophy of Epicurus in Latin verse and the only Epicurean to write philosophical poetry. No reader of the De Rerum Natura can fail to sense in Lucretius the excitement of being the first to restore in Latin the old unity of philosophy and poetry and of being the first Epicurean to compose a poem worthy of this philosophy's conception of nature. By his own estimate, he was the first Roman who was able to bring this philosophy over into his native speech:

Denique natura haec rerum ratioque repertast
nuper, et hanc primus cum primis ipse repertus
nunc ego sum in patrias qui possim vertere voces.
(V 335-337)

These lines have provoked the protest that Lucretius was by no means the first to translate the philosophy of Epicurus into Latin.² The response to Lucretius' claim that he was "the very first of all" to do so has been that he is exaggerating his own place in philosophy just as he has already exaggerated

the place of Epicurus (I 62-79).³ These claims for Epicurus and his philosophy may well be historical exaggerations, but Lucretius' claim that he was the first to translate this philosophy is objectionable only because it rests on a misinterpretation of the text. Lucretius wrote primus cum primis . . . qui possim and his words should be taken quite strictly: "And I myself am the first to be found, among the first, who could translate this philosophy into my native tongue."⁴ Here, at least, Lucretius is hardly exaggerating, and nothing could show this better than a survey of what had been attempted in Latin at the time Lucretius set himself the task of bringing over into Latin the discoveries of his master.

(II)

What is known of Epicurean literature in Latin before Lucretius is slight, connected with shadowy personalities, two or three titles, and no extant remains. Since we are almost entirely dependent on Cicero for what we know, we are exposed to this literature by a critic who held the philosophy of Epicurus in a contempt equaled only by his scorn for the squalid attempts to promulgate it in Latin.

By Cicero's account, Epicureanism was the first philosophy to be translated into Latin, and these translations - such as they were - thus represented the beginnings of a philosophical literature (Tusc. IV 6-7). Once accessible, this philosophy appears to have taken Italy by storm,⁵ and even at the time Cicero was engaged in making known to his fellow Romans its Hellenistic rivals, Epicureanism remained the most popular school of philosophy.⁶ But

perhaps the term 'philosophy' is an exaggeration of Cicero's opinion.⁷ The doctrines of the Epicureans, unlike those of the Stoa and Academy, he regarded as child's play.⁸ Indeed, only the ignorant were likely to find this philosophy congenial; its simplicity, its gutter style of presentation, its lack of any connection with rhetoric or logic, and its vulgarly understood doctrine of voluptas⁹ put it beyond any serious consideration. Thus in the Academica mention is made of the Epicurean Amafinius, but Epicureanism itself is not considered by Varro in his reflections on the lack of Latin works treating philosophical subjects. It was impossible to deny that there was an Epicurean literature in Latin, but those things which are most difficult to express in its rival philosophies - the abstractions of Greek logic and mathematics - made it, by comparison, child's play for a Roman educated in these systems. "We, Varro concludes, "can not follow the example of Amafinius and Rabirius who discuss subjects open to everyone's view in everyday language - and even this they are careless of - dispensing with definitions, classifications, and logical conclusions, and who conceive there to be no such thing as an art of speaking or an art of arguing" (Acad. I 4).

These then are Lucretius' predecessors. In the space of a century they do not seem to have changed either their habits of philosophy or of speech.¹⁰ It is against this general background (admittedly, in part at least, the product of Cicero's ignorance and antipathy) that Lucretius' task and achievement as a translator of Greek philosophy should be measured. For clearly, it can be said for him with even more propriety than it can be said for Cicero, that when he began to write, Latin was destitute of a philosophical literature.¹¹ Some

names can be produced to qualify this assertion. As far as Epicurean literature is in question, these are names usually cited by commentators against what they take to be Lucretius' over ambitious claim that he was "the very first of all" to treat philosophy in Latin.

The first name to figure in such a dossier is that of C. Amafinius who is known only through Cicero and has already been noticed as writing about Epicureanism in a style an educated Roman should avoid. It would appear that his activity followed shortly on the embassy of Athenian philosophers to Rome in 155, an event which signals the introduction of Greek philosophy into Rome as a real force (Tusc. IV 5). Like other Epicureans he wrote on 'Physics', a subject relatively neglected by the other schools. Of his writings, which must have been substantial, one word has survived: corpuscula, which Cicero gives as his term for the atomoi of the Greeks (Acad. I 6). He is also condemned along with C. Catius as a poor translator.¹² From these brief notices it emerges that Amafinius had the distinction of being the first to give evidence in Latin of the vices of his school, and vicious as these writings were in Greek, he could not translate them properly into Latin.

Rabirius is certainly an Epicurean and one of the earliest popularizers of Epicureanism.¹³ Here again we are in the position of knowing only a name tenuously connected with a vast body of literature which Cicero fastidiously claims he never read, nor, indeed, ever had to read.¹⁴

Of Catius as much can be said. His distinction in the group of Epicureans who wrote Latin he shares with Amafinius as a malus verborum interpres. Beyond this, Cicero's correspondence provides two additional

pieces of information. The first is that early in 45 B.C. Cicero speaks of him as recently dead; the second is that he translated the eidola of Epicurus by spectra, a turn which seems to have amused both Cicero and Cassius.¹⁵

But in the case of Catus it is very possible that we can confront the testimony of Cicero with knowledge gained from other sources. Zeller and others have identified the Catus of Cicero's letter to Cassius with the Catus of Horace's Satire: Unde et quo Catus? (II 4). The fact that Catus was long dead when Horace composed this piece is no decisive argument against this identification. Rather it would tend to support it.¹⁶ Horace's imagination in the Satires is not confined to living models. Porphyrio, who wrote a commentary on the Satires, took this fanciful gastrosoph for the Epicurean who wrote a Treatise on the nature of things and the highest good,¹⁷ and Quintilian notes a Catus as in Epicureis levis quidem sed non iniucundus tamen auctor (X 1 124). If in all these references we have, as seems probable, one and not four men, we have evidence for an Epicurean writing at roughly the same time as Lucretius on roughly the same subjects in a style which Quintilian found "not without its charm." But no one, Quintilian least of all, would apply to Lucretius the title of levis auctor.

The name of L. Saufeius is the last to enter this dossier of Epicureans who wrote tracts in Latin either prior to Lucretius or during the period of his literary activity. A friend of Atticus (Nepos, Atticus 12), he naturally comes up in Cicero's letter to Atticus and is in fact mentioned from time to time during the entire period of their correspondence (67-44).¹⁸ It is now known that a

statue of Lucius once stood on the Acropolis in the company of his brother, Appius, and his teacher, the Epicurean Phaedrus.¹⁹ Beyond the little information that can be gleaned from Cicero's casual remarks, there is an interesting note in Servius which gives us at least a notion of his writings.

In discussing the origin of the name Latium (commenting on Aeneid I 6) Servius appeals to the etymology given by Saufeius: Saufeis Latium dictum ait, quod ibi latuerant incolae. It is intriguing to speculate on what kind of work such a note would appear in, and it would seem most natural for an Epicurean to mention this kind of thing in an account of the origin of human society. A like note is to be found in the De Rerum Natura (V 968) where Lucretius is describing the struggle of primitive man with nature and savage animals (vitabunt pauca latebris).²⁰ Possibly Saufeius' treatise, whatever its precise subject, appeared only after Lucretius' death and too late to have a proper place in this survey.

In the decade following the publication of the De Rerum Natura, it would seem that the Epicureans in Rome had little time for writing tracts when, as Momigliano has put it, "for the first and last time they deserted en masse their hortulus and became eminently political."²¹

(III)

Such, then, was the Epicurean literature in Latin. It was a literature which won a large following among the lower classes who knew no Greek. For Romans of culture and education, however, there was no need to turn to these tracts. The library of L. Calpurnius Piso at Herculaneum is striking testimony

to the kind of philosophical literature a Roman patrician could command. Indeed, Piso's position was an enviable one; he possessed not only an incomparable library of philosophical writings, but was patron to a philosopher whose writings filled its shelves.²²

This is a fact of some importance for a just estimate of the task Lucretius set himself. His audience was a Roman audience and necessarily a cultivated one. His readers are represented by the figure of C. Memmius to whom Lucretius dedicated the De Rerum Natura. Memmiadae nostro of I 26 represents more than Lucretius' solution for the scansional difficulties of Memmio. Like the Scipiadas of III 1032, the Greek patronymic is a recognition of the Greek culture of the man to whom he dedicated his philosophical poem - a man who was, in Cicero's words, perfectly versed in Greek, but contemptuous of Latin.²³ The resistance of such a reader to another exposition of Epicurean philosophy is easily conceived, and Lucretius' sustained exhortation in Book I is, in part, designed to overcome it. In writing for an audience such as that represented by Memmius, Lucretius was confronted with exactly that dilemma which faced Cicero a decade or so later. Both were "unwilling to write what the uneducated could not understand and the cultured would not care to read."²⁴ To attract this reluctant reader Cicero adopted the form of a philosophical dialogue, written Aristotelio more, and attempted to translate his originals freely in a cultivated, rhetorical style. Before him Lucretius had chosen to present the philosophy of Epicurus in verse (doctis dictis) - a choice which makes him unique among Epicureans in either Latin or Greek. By this choice Lucretius created for himself problems which Epicurean prose writers did not have to face,

but a consideration of the character of their writings and the quality of their translations goes someways at least in explaining why Lucretius wrote philosophical poetry.

In such a light, then, it can be seen that if Lucretius had serious rivals in translating Greek philosophy, they were contemporary Greeks and not the Romans who wrote before him. An educated man like Memmius could very well spare himself the vexation of reading in Latin a philosophy easily accessible to him in Greek. Piso could turn to his Epicurean library in Herculaneum and to Philodemus for an exposition of Epicureanism. As for the other schools of philosophy, it will be enough to recall that Cicero could name among his familiares Diodotus, Philo, Antiochus and, most impressive of all, Posidonius (N.D. I 7), without exhausting his list.

(IV)

As interpreters and translators of rival Greek philosophies Cicero and Lucretius face the same general problem. Varro gives a very fair statement of it in the Academica. A writer of philosophy in Latin who wanted an audience had to attract the educated reader while keeping in mind the requirements of the reader who knew no Greek; his treatment must justify itself to the one class of reader by its style, to the other by its success in making points of philosophy intelligible in Latin alone.²⁵

From this point of agreement, however, Lucretius and Cicero part sharply in their conception of the business of translation. The clearest statement Lucretius gives of his own conception introduces the reasoning by which he arrives at the existence of the Epicurean atom.

nec me animi fallit Graiorum obscura reperta
 difficile inlustrare Latinis versibus esse,
 multa novis verbis praesertim cum sit agendum
 propter egestatem linguae et rerum novitatem.
 (I 136-139)

Lucretius is conscious of a problem which can be seen as threefold: his argument is difficult to illustrate in Latin poetry because it is 'obscure', because he has chosen to expound it in verse, and because it introduces novel conceptions which tax heavily the resources of Latin.

Discounting the difficulties of setting his arguments forth in verse, Lucretius is contradicted in almost every point by Cicero, who regarded Epicureanism as a bogus philosophy, entirely familiar in Latin, and Latin itself a language superior even to Greek in matters of philosophy.²⁶

In all of these confident assertions Cicero has met with contradiction, both by Romans grappling with the problems of expressing the concepts of Greek philosophy in Latin, and by students who have little reason to agree that the philosophy of texts whose meaning is painfully obscure is 'child's play'. Lucretius' complaint on the poverty of Latin is echoed by Seneca and Pliny. Boethius, who was profoundly aware of the problems of translation, regarded Cicero's claim that Latin was philosophically an even richer language than Greek as no more than a jest.²⁷

Cicero's claim that Epicureanism was a philosophy which could be easily mastered can not now be countered; Book X of Diogenes Laertius and the papyrus fragments from Herculaneum are not easy going. Hermann Diel's dissatisfaction with Cicero's understanding of Greek philosophy is well documented in his Doxographi Graeci,²⁸ and it is satisfying to be able to cite

against Cicero's judgment of Epicureanism the terms Usener chose to describe its attraction to him as a philologist: obscuritas and difficultas (Epicurea, praef. v) indicate that he has taken the part of Lucretius: Nec me animi fallit Graiorum obscura reperta difficile inlustrare Latinis versibus esse.

With this, enough has been said in justification of Lucretius against what has sometimes been taken as the masked polemic of Cicero. The real question here is rather how Lucretius regarded his task as a translator of Greek philosophy. It has been seen that Lucretius encountered three difficulties. Each of these points is worth special consideration, especially the first, since it gives a clear indication of Lucretius' attitude toward the sources he was attempting to represent. The term obscura (in Graiorum obscura reperta) indicates this attitude, but it has proved difficult and easier to gloss than interpret.²⁹

Obscura is ambiguous and Lucretius' meaning is half lost in translation. Enrou's "ces obscures découvertes des Grecs" is quite literal but unsatisfactory if taken literally. If Lucretius regarded his originals as obscure, they would share in the vice of the oracularly cryptic Heraclitus who earns his contempt as clarus ob obscuram linguam (I 639).

It is extremely dubious that Lucretius would regard the writings of Epicurus in particular as obscura, since it is precisely the quality of clarity (σαφήνεια) that his master insisted upon:

E tenebris tantis tam clarum extollere lumen
qui primus potuisti inlustrans comoda vitae ...
(III 1-2)

The noncommittal "dark discoveries" of Munro (adopted by Bailey) is preferable since it makes possible another interpretation of obscura by its

deliberate ambiguity. Fortunately, the force of obscura becomes clear in its context. Lucretius' exordium completes itself in the following lines:

sed tua me virtus tamen et sperata voluptas
suavis amicitiae quemvis efferre laborem
suadet et inducit noctes vigilare serenas
quaerentem dictis quibus et quo carmine demum
res quibus occultas penitus convisere possis.

(I 140-145)

These lines are resonant and suggest in their individual terms the Greek of Epicurus. In sperata voluptas suavis amicitiae lies the Epicurean ideal of friendship, and noctes serenas suggests the calm of the man freed by philosophy (cf. IV 969-970). Another term which seems to force an Epicurean interpretation of this passage is the rare compound convisere which, taken with res occultas, calques the Greek of the Letter to Herodotus (38.7): συνορᾶν ἥδη περὶ τῶν ἀδῆλων (cf. Epicuro [127]). The antithesis of res occultas penitus convisere guarantees the interpretation of the preceding obscura inlustrare. (So does Cicero's description of "Physics" (physike) as naturae obscuritas.)³⁰

These lines mark the transition from poetry to Epicurean poetry, and in his exordium to Epicurean philosophy Lucretius singles out one of the gravest difficulties of this philosophy. For the Epicurean, all we know is derived from sensation, and our knowledge of the ultimate realities must be derived from the experience of our senses by a process of reasoning. Lucretius can never show Memmius an atom; he can only demonstrate to him that such caeca corpora must exist to explain our experience. Thus Lucretius' Graiorum obscura reperta must refer principally to the realities of the atoms and void. Seen in this manner, Lucretius' conception of the difficulties peculiar to his task is an Epicurean

conception. On his theory of knowledge, egestas linguae amounts to rerum novitas (note II 1023-1025).

This Epicurean interpretation of the terms of Lucretius' exordium is guaranteed by a later restatement of the difficulty of illustrating the existence of the fundamental realities of Epicurean physics. This restatement follows on Lucretius' refutation of the homoeomeria of Anaxagoras and is introduced by the same preliminary formula: nec me animi fallit quam sint obscura (I 922). What this exordium introduces is once again beyond the range of human experience (quo non longius haec sensus natura sequatur 962), but that the atoms exist in infinite number and that the void extends without limit is within the reach of human reason.

Although Greek atomism and Greek philosophy had developed conceptions for which Latin had no native equivalents, Lucretius recognizes that, as a translator and interpreter of these notions, he can not in every case arrive at a Latin word which will carry their full weight. He also realizes that since these abstractions are based necessarily on sense experience, he can appeal to that experience to make them intelligible in Latin. If the Greek concepts are novel, and the words he is translating have no equivalent in Latin, he can appeal to communis sensus - the common experience of mankind³¹ - and by this common experience he can bring his reader to that class of objects which lie beyond experience. Thus he can arrive at the caeca corpora which alone explain the world of common experience.

Consequently, when confronted with the homoeomeria of Anaxagoras he abandons any attempt to fashion a Latin equivalent and rather turns to the

straightforward explanation of the thing itself:

Nunc et Anaxagorae scrutemur homoeomerian
quam Grai memorant nec nostra dicere lingua
concedit nobis patrii sermonis egestas, sed
tamen ipsam rem facilest exponere verbis.

(I 830-833)

There is a third passage in Lucretius where the poet despairs of the patrii sermonis egestas. From this, it will be seen again that Lucretius' diffidence of the resources of Latin is not all embracing but is provoked by a special difficulty. In this case it is the difficulty of giving a full account of the manner in which the atoms of the soul (animus/anima) are interconnected.

Nunc ea quo pacto inter sese mixta quibusque
compta modis vigeant rationem reddere aventem
abstrahit invitum patrii sermonis egestas;
sed tamen, ut potero summam attingere, tangam.

(III 258-261)

That Lucretius does abandon any attempt to give this question a full exposition is perhaps directly attributable to the poverty of his native language. In such an attempt it is likely that he would be severely handicapped by Latin's poverty in terms denoting precise and invariable relations;³² probably the Greek terms for the shapes of the atoms were equally intractable in Latin, since they come, for the most part, from Greek geometry.³³ This second point is supported by Lucretius' confession that he can not give a complete account of the atomic basis of human character:

quorum ego nunc nequeo caecas exponere causas
nec reperire figurarum tot nomina quot sunt
principiis, unde haec oritur varantia rerum.

(III 316-318)

This confession of the limitations of Latin is prompted here, as twice

previously, by the fact that Lucretius had arrived at a point of his exposition where he had to treat τὰ ἄδηλα (here caecas causas):³⁴

ocius ergo animus quam res se perciet ulla
ante oculos quorum in promptu natura videtur.
(III 184-185)

To make visible the invisible structure of the world of the senses was then, as Lucretius saw it, a great part of his task as a translator. And this is the precise meaning of the terms which he chose to state his objectives:

Graiorum obscura reperta - inlustrare. As had Anaxagoras, Lucretius saw in the world of sense the visage of the invisible: Ὅψις τῶν ἀδήλων τὰ φαινόμενα.³⁵

namque alid ex alio clarescet nec tibi caeca
nox iter eripiet quin ultima naturai
pervideas: ita res accendunt lumina rebus.
(I 1115-1117)

The metaphoric language of this passage points out an antithesis which is peculiarly Lucretian and which runs through the De Rerum Natura. For Lucretius the visible workings of nature (naturae species ratioque) are the path to its hidden realities, and the best title to his fame as a poet and translator can be expressed in his own words:

quod obscura de re tam lucida pango carmina.
(I 932-933)

(V)

Lucretius' patrii sermonis egestas is, therefore, in no sense an ignoble concession to the superiority of Greek. Rather it represents a harder view than Cicero took of the difficulties of translation into Latin. As an Epicurean,

Lucretius could take no other view. The archai of the atomists were remoter from the world as we know it than those of any other ancient school.

Lucretius has been seen to face the difficulties of his task as an Epicurean. It remains to ask if he solved them as an Epicurean.

Whether Lucretius used words in Latin as an Epicurean would use them in Greek is a question which can only be answered when his technique as a translator and interpreter has been observed in detail. It seems legitimate to ask here, however, if there is in the De Rerum Natura any acknowledgement of Epicurus' precepts on the use of words in philosophical discourse. A review of these fundamental cautions should reveal what direction Lucretius might have had, in theory, as an Epicurean.

In the Letter to Herodotus Epicurus introduces the exposition of his physical system proper by an admonition on the use of words: Πρῶτον μὲν οὖν τὰ ὑποτεταγμένα τοῖς φθόγγοις, ὧς Ἡρόδοτε, δεῖ εἰληφέναι, ὅπως ἂν τὰ δοξαζόμενα ἢ ζητούμενα ἢ ἀπορούμενα ἔχωμεν εἰς ταῦτα ἀναγαγόντες ἐπικρίνειν, καὶ μὴ ἄκριτα πάντα ἡμῖν <ἢ> εἰς ἄπειρον ἀποδεικνύουσιν ἢ κενούς φθόγγους ἔχωμεν. ἀνάγκη γὰρ τὸ πρῶτον ἐννόημα καθ' ἕκαστον φθόγγον βλέπεσθαι καὶ μηθὲν ἀποδείξεως προσδεῖσθαι, εἴπερ ἔχομεν τὸ ζητούμενον ἢ ἀπορούμενον καὶ δοξαζόμενον ἐφ' ὃ ἀνάξομεν.
(37.6-38.2)

This precept is perfectly consistent with Epicurus' empiricism; if words have no referents, they have no meaning. ³⁶

The problem of using words which evoke clear and distinct ideas is, obviously, of a very different order for a Roman living in the generation of Cicero than for a Greek living at the time of Aristotle. This was the most

serious problem Lucretius had to face:

multa novis verbis praesertim cum sit agendum
propter egestatem linguae et rerum novitatem.
(I 138-139)

It has been suggested that Lucretius introduced the unfamiliar concepts of atomism by an appeal to the common experience upon which his system based itself. Philosophically, this is a matter of conjecture (ἀναλογία),³⁷ poetically, of simile and exempla:

dumtaxat rerum magnarum parva potest res
exemplare dare et vestigia notitiae.
(II 123-124)

Beyond this, as Lucretius suggests himself, it is a matter of new words (nova verba) which can not call to mind any clear idea. Had Lucretius calqued the Greek of Epicurus in Latin, as did sometimes Pierre Gassendi, he would have been haranguing a deaf audience (V 1052).

It would seem that Epicurus, for whom Greek was the only language of philosophy (DL X 117, Us. fr. 226), could be expected to have nothing to say on the problem of translation. It seems he did not, but there are remarks in Epicurus which have a very direct application to the problem of translation. Whether Lucretius recognized the relevance of Epicurus' remarks on the process of development and innovation in language for his own task as a translator is a matter of conjecture. That Lucretius knew and expounded the Epicurean account of the origin of language is known to every reader of Book V of the De Rerum Natura.

Briefly, the Epicureans believed that language had its origin not in θέσις but in φύσις. As it is developed in the Letter to Herodotus,

Epicurus' argument runs that sounds are produced in men (Lucretius would add animals) as a response to the imprint made by the objects of experience. Particular races receive particular impressions, and it is only in a later stage of development that the process of reasoning (λογισμός) refines language and introduces abstractions. This last is a most important stage:

τινὰ δὲ καὶ οὐ συνορώμενα πράγματα εἰσφέροντας τοὺς
 συνειδόμενους παρεγγυῆσαι τινὰς φθόγγους τοὺς <μέν>
 ἀναγκασθέντας ἀναφωνῆσαι, τοὺς δὲ τῷ λογισμῷ ἐλο-
 μένους κατὰ τὴν πλείστην αἰτίαν οὕτως ἐρμηνεύσαι.
 (76.4-7)

The interpretation of the first stage of development is made difficult by the compression with which Epicurus expresses his meaning. From the paragraph which precedes (75), it is likely that we are dealing with the immediate response provoked either by vision (φαντάσματα) or the other senses and the passions (πάθη). The development from this is of interest in regard to Lucretius. Unfamiliar things such as the Graiorum obscura reperta (οὐ συνορώμενα πράγματα) are introduced into a language on the basis of reason and deliberate choice: κατὰ τὴν πλείστην αἰτίαν οὕτως ἐρμηνεύσαι.³⁸

Translations of this phrase vary considerably according to what the translator takes Epicurus to mean by κατὰ τὴν πλείστην αἰτίαν. What would present itself as a compelling reason for preferring one innovation to another? The Epicurean answer to this question would seem to be analogy. Just as new concepts are inferred from experience by means of analogy, so new words should be formed by analogy to existing words. This is the reasoning by which Gassendi arrived at: tum illos ratiocinio quodam, coniecturamque rem assequentes, ex multa denique assuetudine ipsorum mentem intellexisse.³⁹

In summary: according to Epicurus, words already current in a language should be used in their first and obvious meaning. New words introducing unfamiliar concepts into a language should be formed on analogy with similar abstracts. In Lucretius there are a good many indications that these precepts guided his choice of terms. Two or three out of many possible examples will show that Lucretius, following Epicurus, singled out words used in a special sense and took pains to note the appropriateness of these special terms.

The beginning of Book IV of the De Rerum Natura gives an example, paralleled in Epicurus, of how attention is drawn to a word when it is first used in its technical sense. Here Lucretius is introducing the simulacrā:

nunc agere incipiam tibi, quod vehementer ad has res
attinet, esse ea quae rerum simulacra vocamus.

(IV 29-30, 51-53)

The parallel in Epicurus occurs in a like context in the Letter to Herodotus where the films which flow off bodies and strike our senses are introduced as the medium of vision: τούτους δὲ τοὺς τύπους εἶδωλα προσαγορεύομεν— (46.6). This entails the corollary that words used in a special sense should be introduced with some word of explanation or justification.⁴⁰

In addition to marking off a familiar term as bearing a technical meaning, it can be noted that in both Lucretius and Epicurus attention is called to the appropriateness of the term to what it describes. An instructive example of this comes from the Letter to Herodotus (70.3) where the choice of the term for the 'accidents' of matter (συμπτώματα) is justified by its derivation from the common verb designating any chance occurrence (συμπίπτει). Here we are in the uncommon position of observing the process of analogy at work:

ὥστε δὴ κατὰ τὴν πλείστην φόρᾰν τούτῳ τῷ ὀνόματι
(συμπτώματα) χρώμενοι φανερὰ ποιοῦμεν τὰ συμπτώ-
ματα οὔτε τὴν τοῦ ὄλου φύσιν ἔχειν ...

In addition to the other parallels elsewhere in this same letter, there is a good counterpart to this manner of introducing and justifying terms used in a technical sense in Lucretius. The distinction introduced is the same in both; Lucretius translates Epicurus' αἰδῖον παρακολουθοῦντα by coniuncta, his συμπτώματα by eventa:

haec soliti sumus, ut par est, eventa vocare.
(I 458)

Bailey is quite right in suggesting that Lucretius' ut par est is an acknowledgement of Epicurus' precept that words should be used in their first and obvious sense (cf. Lucretius I 52). His comment on this line is that by haec soliti sumus, ut par est, eventa vocare Lucretius is saying "not I, Lucretius, am in the habit of calling, but we Romans." This, however, does not amount to saying that eventa in the special sense of συμπτώματα was already current in Latin. It was not. Rather ut soliti sumus is Lucretius' equivalent for κατὰ τὴν πλείστην φόρᾰν - "according to common usage."

(VI)

But in every case Lucretius' choice of new words for new concepts does not, and could not, model itself on "usage." By breaking with Epicurus' precept that the sage will not write poetry, Lucretius imposed serious limitations on his choice of words. These limitations are self imposed; Lucretius makes it quite clear why he chose to treat Epicurean physics in a philosophical poem.⁴¹ The restrictions of the Latin hexameter on Lucretius' technical vocabulary must,

therefore, come under review as a conclusion to the analysis of Lucretius' conception of his task as a translator.

The restraint of the hexameter on Lucretius' freedom of choice as a translator and interpreter can be seen as exercising itself on two levels. On the first and fundamental level, it is obvious that any word containing a cretic which cannot be eliminated by hiatus or elision, or a tribrach whose final syllable cannot be lengthened by position, is rigidly excluded from the hexameter. Thus Lucretius' choice of the odd mobilitas for ταχυτής explains itself by the fact that his most obvious choices - velocitas and celeritas - are metrically impossible.⁴² On another level, the restraint of the hexameter enforces itself by excluding certain words from the fifth and sixth feet of a line as a matter of aesthetic effect.

In any list of Lucretian hapax legomena⁴³ it will be noted that there are two classes of compound nouns which figure predominantly: third declension neuters in -men and fourth declension abstract substantives in -tus. In addition, formal analysis of Lucretius' vocabulary shows that many common abstract nouns formed in -tio from verb stems of the first conjugation are represented in Lucretius by rare formations in -tas and -tura. In a good number of these rare Lucretian formations it is obvious that immediate clarity had to be sacrificed to the requirements of the hexameter. The restrictions of meter on this level can best be seen by a comparison of Cicero's technical vocabulary with that of Lucretius where the hexameter forced a choice of an uncommon formation. The comparative tabulation given below is taken from K. C. Reiley's Studies in the Philosophical Terminology of Lucretius and Cicero.⁴⁴ Lucretian

hapax legomena have been underlined.

| <u>Lucretius</u> | <u>Cicero</u> | <u>Lucretius</u> | <u>Cicero</u> |
|------------------|---------------------|------------------------|----------------------------|
| differitas | differentia | <u>clinamen</u> | declinatio/ inclinatio. |
| compositura | compositio | <u>vexamen</u> | vexatio |
| dispositura | dispositio | <u>refutatus</u> | refutatio |
| maximitas | magnitudo | <u>emissus</u> | emissio |
| satias | satietas | commutatus | commutatio |
| variantia | varietas | <u>opinatus</u> | opinatio |
| aegror | aegritudo | contages/ contagium | contagio |
| pestilitas | pestilentia | adhaesus | adhaesio |
| sensilis | sentiens | concursum | concursum |
| regimen | principatus | visus | visio |
| mobilitas | velocitas/celeritas | titillare | titillatio |
| | | concilium | concretio |

There is a third class of words, important in Lucretius, which fit into the hexameter only in some of their cases. Where these terms are important for Lucretius' argument, he frees himself from their inflexibility by using doublets which supply their unmetrical case forms. Such a case is his principal term for the atoms, primordia, which will not fit into the hexameter in its genitive and dative/ablative plural. Lucretius substitutes for the unmetrical forms of this word forms of the etymologically similar principia (principiorum/principiis). By this same technique he is able to use as one of his equivalents for the eidola of Epicurus the term imago by using simulacra and effigiae/effigias for its unmetrical nominative and accusative plural (see Munro's note on IV 30). As a result of adopting two or three word equivalents which make a term possible in all cases, primordia and principia, imago, effigiae, and simulacra are used with practically no distinction in meaning.

Once admitted into Lucretius' vocabulary, technical terms often come

into conflict with the poet's feeling for the elegance of the hexameter. When they do, considerations of vocabulary outweigh those of elegance. In his examination of Lucretius' meter and prosody, Bailey has shown that Lucretius will admit into the fifth and sixth feet of his line words which threaten to destroy the effect, sought in Cicero and Augustan dactylic verse, of a coincidence of ictus and accent. That Lucretius felt the resolution of ictus and accent desirable in the last two feet is shown by the fact that he is careful to protect coincidence by placing a monosyllable before words of one and four syllables. He will, however, admit words of five, four, and one syllables into the end of his verse. In a good number of cases these words are technical terms essential to his argument. Bailey notes that res occurs at the end of the line 36 times, vis 25 and mens 8 times. In Books I and II of the De Rerum Natura the words materiali and principiorum account for 50 out of the 149 pentasyllabic endings. It is by a careful marshalling of statistics such as these that Bailey supports his conclusion that in Lucretius "rhythm is to a great extent dictated by vocabulary" (Lucretius I 117).

CHAPTER II

The Problem of Lucretius Sources

(I)

Source Criticism

Carlo Giussani introduced his Studi Lucreziani by a note on Lucretius' sources. This seems the best beginning in any attempt to interpret the De Rerum Natura in terms of the philosophy which is its inspiration and argument. Commentaries and editions of the De Rerum Natura written in the last half century include, in explanation of the progressive stages of Lucretius' argument, the text of the letters to Herodotus and Pythocles almost entire, together with a generous selection from the Kyriai Doxai and the Gnomologium Vaticanum. The 'Belles Lettres' Commentaire of Ernout-Robin acquits itself of an introduction to the philosophy of the De Rerum Natura by giving in translation the three letters preserved in Diogenes Laertius and the Kyriai Doxai.⁴⁵

Before entering into a detailed discussion of Lucretius' translation of Greek philosophy, it is necessary to say something about his sources: the 'sources' not only for the physical doctrines of the De Rerum Natura but also for the language in which they were expressed. To judge Lucretius as a translator of Greek philosophy it is necessary to study the Latin of the De Rerum Natura face to face with its Greek original. It is, I believe, the defect of earlier accounts of Lucretius' philosophical vocabulary to have failed to penetrate to the source of both his thought and his manner of expressing it. Accordingly the method of these studies will be to match Lucretius' exposition with that of his original and to work from a large agreement in argument to the narrower agree-

ment of language. A brief statement on the sources of Lucretius' poem should serve to fix the terms for what follows.

Criticism of Lucretius' philosophical sources has operated directly, and by indirection; and, according to its methods, it has produced two kinds of results. The work of Woltjer and Giussani has demonstrated that the Latin of the De Rerum Natura often alligns itself very neatly alongside the Greek of Epicurus. It is Giussani's contribution to have pointed to the impressive correspondences afforded by the Letter to Herodotus. Often, as Bailey has remarked, it is impossible to resist the conclusion that Lucretius was translating passages from this letter (Lucretius I 25).

The alternative method of source criticism has been to reconstruct - or to attempt to reconstruct - Lucretius' philosophical sources where these no longer survive and direct confrontation is no longer possible. The results of this method are meagre for the study of Lucretius in terms of translation and are, in the main a supplement to the Letter to Pythocles.

R. Reitzenstein has shown that it is possible to take much of the 'meteorology' of books 5 and 6 back to the Physikon Doxai of Theophrastus through Epicurus.⁴⁶ Theophrastus' treatment of Presocratic thought on meteorological phenomena does not survive, nor does the Letter to Pythocles cover all of the topics treated in the De Rerum Natura. Accordingly, one is forced to follow the doxography downstream and is very often in the position of knowing the bare content of Lucretius' source through works which depended on the doxographic tradition. Often the only evidence for Lucretius' source is Lucretius, or the Latin of Seneca or Pliny.⁴⁷ Indirect criticism of Lucretius' sources has, there-

fore, very little to contribute to the study of the De Rerum Natura as a translation. What it shows is that the language of these sources is lost almost beyond recovery. In the extreme case, our only basis for reconstructing the language of Lucretius' original is Bailey's translation (of Bergsträsser's translation) of an Arabic text which claims to be a translation of a Syriac version of Theophrastus.

Reitzenstein's very helpful display of ancient parallels to Bergsträsser's Arabic text is, however, illuminating on one point: it gives many of the exempla or 'models' by which early 'physiology' explained phenomena such as thunder and lightning. These are naturally of very great interest for Lucretius' manner of explaining τὰ μετέωρα.

For the most part, then, the sources of Lucretius' philosophical exposition, in so far as they have survived, lay at hand and have been at hand for some time. Unaccountably, they have gone unused in the two principal studies of Lucretius' philosophical terminology.⁴⁸ This fundamental error leads to simplifications of questionable value, and results in serious distortion of Lucretius' philosophical terminology. By these accounts, Lucretius' technique in translating the language and concepts of Greek atomism is seen as that of a lexicographer.

But neither Cicero nor Lucretius translated literally, and it should be remembered that the Latin interpres is not equivalent to 'translator' until the Christian era.⁴⁹ The language of a philosophical system like Greek atomism can yield very little but a lexicon of simplifications when it has been detached from its living context and denuded of the vital qualifications which alone give the full meaning of a text. The effect of Reiley's Studies in the Philosophical

Terminology of Lucretius and Cicero and the tendency of Traglia's De Lucretiano sermone ad philosophiam pertinente has been to present Lucretius' as a literal translator and not an interpres in the pre-Christian sense of this word. In the terms of this study translation is best understood as Lucretius' attempt to give his reader a conception (notities) of the meaning of his original: in this sense, it is also worthwhile to ask what he did not bring over into Latin.⁵⁰

Since both Reiley and Traglia tend to examine the De Rerum Natura in terms of 'terminology' and not translation, Lucretius' Latin is seen in isolation from its context in Greek. As a result meaning is regarded as conveyed mainly by abstract nouns, and Lucretius is seen as matching noun with noun, but ignoring those elements which give the language of his original its full and subtle meaning. From this method of interpretation, it would appear that Lucretius was insensible to the meaningful nuances of particles, adjectives and adverbs; insensible in effect to the meaning of his original.

(II)

Epicurus: the Letter to Herodotus

In marked and somewhat somber contrast to the brilliant and disparate literary background Lucretius incorporated into the De Rerum Natura, stands the solitary figure whose name seems to sum up Lucretius' philosophical sources.

te sequor, o Graiae gentis decus, inque tuis nunc
ficta pedum pono pressis vestigia signis,
non ita certandi cupidus quam propter amorem
quod te imitari aveo;

tu pater es, rerum inventor, tu patria nobis
suppeditas praecepta, tuisque ex, inclute, chartis,
floriferis ut apes in saltibus omnia libant,
omnia nos itidem depascimur aurea dicta,
aurea, perpetua semper dignissima vita.

(III 3-6, 9-13)

Lucretius' attitude toward Epicurus is so emphatically stated in the De Rerum Natura that it has become axiomatic in the study of Epicureanism that Lucretius diverged from the teachings of his master in no point of importance. The numerous attempts to emend or complete the text of Epicurus through Lucretius are good indication of the general acceptance of Giussani's edict: "d'un Lucrezio innovatore o correttore del sistema bisogna bandire del tutto l'idea" (Studi Lucreziani 10). Because this attitude of reverence⁵¹ seems to have been shared by other Epicureans from Epicurus' immediate successors until the time of Diogenes of Oenoanda, it is almost impossible to speak meaningfully of a "history" of Epicureanism. The maiestas cognita rerum like the fundamentals of nature did not change.⁵²

Tuis nunc ficta pedum pono pressis vestigia signis:
 these lines have dictated the primary object of the source critic.⁵³ Here is clear indication that Lucretius is following the footsteps of his master; but Lucretius does not, in the fashion of Diogenes Laertius, indicate his source in the writings of Epicurus.

One of the oddities of Lucretian criticism is that while Giussani's statement of Lucretius' fidelity to the system of Epicurus is accepted with utmost confidence, no critic of Lucretius' sources could bring himself to envision him as did Tennyson, turning "to ponder those three hundred scrolls left by the teacher whom he held divine." The 300 scrolls in question contained the total output of Epicurus, whom Diogenes calls "the most prolific of all the ancients" (X 26). Again it seems strange, but agreeable, to assume that the only source for our knowledge of Epicurus' system of the physical world was also that of

Lucretius.

If it can be shown that the Letter to Herodotus was Lucretius' principal source for the doctrines of Epicurean physics, the reader of the De Rerum Natura is in the extraordinarily fortunate position of studying the philosophical argument of Lucretius' poem in the light of its immediate source. But the incomplete catalogue of Epicurus' writings by Diogenes Laertius gives a good idea of the extent of Epicurus' published work on physics alone: this list of what Diogenes considered the best of Epicurus' writings is headed by the monumental Περὶ Φύσεως in 37 books. This compendium was supplemented by an impressive number of specialized treatises and polemical tracts.⁵⁴ Apart from the papyrus fragments found in Herculaneum, all that survives of this enormous production is the Letter to Herodotus: this Usener has called "the purest source for Epicurus' doctrine on the physical world" (Epicurea xxxvii).

However, Giussani has succeeded in making it abundantly clear that this 'Short Epitome', as it is called in the Letter to Pythocles (85.6), could not have been Lucretius' only source for his exposition of Epicurean physics. Arguing directly from a confrontation of the first book of the De Rerum Natura with the text of the Letter to Herodotus, Giussani points out that, although the correspondences which emerge are most impressive, the order of treatment is not the same in both, and there are some topics treated by Epicurus, but not Lucretius, and others taken up by Lucretius, but not Epicurus.⁵⁵

Bailey has extended this comparison to the remaining books of the De Rerum Natura. Since this study will follow the order of Lucretius' exposition and not that of the Letter to Herodotus, it will be convenient to reproduce here

Bailey's scheme which presents the correspondences in terms of the letter
(Lucretius I 23).

| <u>Letter to Herodotus</u> | <u>De Rerum Natura</u> |
|--|------------------------|
| 39 Nothing is created out of nothing, etc. | I 146-264 |
| " The universe is ever the same | II 294-307 |
| " The universe consists of body and space | I 418-29 |
| 40 Besides these two there is no other existence | I 430-48 |
| 41 Body exists in the form of indivisible particles | I 483-583 |
| 41, 42 The universe is infinite: the atoms in number, space in extent | I 951-1051 |
| 42 Difference of shape in the atoms | II 477-568 |
| 43, 44 Motion of the atoms | II 62-164 |
| 45 Infinite number of worlds | II 1023-1104 |
| 46-52 Sense perception: sight | IV 48-468 |
| 52-3 Sense perception: hearing | IV 524-614 |
| 53 Sense perception: smell | IV 673-705 |
| 54-5 Properties of the atoms, shape, weight, and size | II in various places |
| 55-9 The inseparable parts of the atoms | I 599-634 |
| 60 Upward and downward motion | — |
| 61-2 Motion of the atoms | II 62-164 |
| 63-8 The soul: its corporeal nature | III 94-322 |
| 68-73 Properties and accidents | I 449-82 |
| 73-4 Creation of worlds | V 416-509 |
| 75-6 Origin of language | V 1028-90 |
| 76-7 The heavenly bodies | V 510-770 |

The conclusion which this method of confrontation has forced on Giussani and Bailey is that, although it is clear that Lucretius made considerable use of the Letter to Herodotus, he must have had fuller information gained from another source or from other sources. Bailey thinks it reasonable to suppose that this other source was the Megale Epitome - of which nothing has survived - and that, on occasion, Lucretius turned to the Περὶ Φύσεως, itself (Lucretius I 25). Giussani, for his part, argues for the Μεγάλη Ἐπιτομή alone: "un qualche cosa di meno ampio, ma non molto assimilabile del poema Lucreziano" (Studi Lucreziani 9).

This is an awkward conclusion, but its logic has been felt compelling. The Megale Epitome survives only as a title and the sole authority for its existence comes from the references to it in the scholia embedded in the Letter to Herodotus.⁵⁶ This notwithstanding, the reasons for appealing to it as a source for Lucretius have generally been thought persuasive and should be clearly stated.

As Bailey remarks, and as can be shown at length, the correspondences between the Letter to Herodotus are occasionally so close that it must be supposed that we have in this letter the very text Lucretius was translating. However, these correspondences are by no means complete and the lack of correspondence in the order and manner of presentation, as well as in the subjects treated, makes it equally impossible to believe - with Brieger - that this was Lucretius' only source. From this point the logic of source criticism seems to proceed by elimination: first by elimination of possibilities other than the Μεγάλη Ἐπιτομή and the Περὶ Φύσεως, and then, by elimination of the Περὶ Φύσεως itself.

But there is, in fact, no reason to believe that Lucretius did not know and use the *Περὶ Φύσεως*. Bailey does not go so far as to eliminate this possibility, and believes that some of Lucretius' examples can be taken back to this source. On this point a study of the Herculaneum material proves him right,⁵⁷ but collation of these fragments with the poem of Lucretius fails to reveal much evidence of direct translation. Again the assurance that Lucretius used the *Μεγάλη Ἐπιτομή* but did not go to the source of Epicurean physical doctrine reveals the ambiguities and contradictions of the hidden assumptions of source criticism. These ambiguities are inherent in the critical attitude which regards Lucretius as scrupulously orthodox and almost slavishly faithful to the system of his master, and yet, is unwilling to believe that, as a Roman poet and as an Epicurean, he was capable of the energy and the seriousness which would take him beyond an epitome of the teaching which is the argument of his poem.

Just as the *Μεγάλη Ἐπιτομή* is supposed to have followed the *Μικρὰ Ἐπιτομή* (the Letter to Herodotus) in the scale of difficulty, so it would seem that, on the scale of plausibility, it must supplement this letter as a source for the De Rerum Natura.⁵⁸ Indeed it seems permissible to imagine that it existed in seven rolls in as much as there are six books to the De Rerum Natura and the promise of a fuller discussion of the gods.⁵⁹ And yet, no fragment of this popular handbook has yet turned up in the Villa dei Papiri, nor does the work itself figure in Diogenes list of the best of Epicurus' writings (X 27-28).

Once the critic seems to be allowed a glimpse of Lucretius' source

through his admission that he has been compelled to treat in summary (summatim) the Epicurean teaching on the atomic basis of human character (III 316-318). The Letter to Herodotus is here excluded as a source, but what, other than the critic's estimate of Lucretius' energy and resources, will enable him to point to the Μεγάλη Ἐπιτομή rather than the Περὶ Φύσεως or one of Epicurus' specialized treatises?

This seems to be the logic which, by a not entirely logical process of elimination, names the Μεγάλη Ἐπιτομή as a source for Lucretius and the Greek counterpart of his De Rerum Natura. One basis for conjecture on Lucretius' sources is to return to the poem itself and to refine the comparisons between it and the Letter to Herodotus. In the following studies it will be seen that there are correspondences between the Letter to Herodotus and the De Rerum Natura which are close enough to reveal translation rather than coincidence of argument. It will be seen that Lucretius rendered the language of his original in a manner that reproduces its full meaning, including the dead metaphors of Epicurean logical terminology and extending to the attempt to reproduce the logical inflections of the Greek particles. It can even be observed that in some cases Lucretius has mistranslated his original by not fully understanding it and blurring distinctions clearly marked in the Greek.

Here are those arguments in the Letter to Herodotus which Lucretius seems to have incorporated in the De Rerum Natura in almost verbatim translation.

1. Nothing is created out of nothing.
2. Nothing is reduced to nothing.

3. The universe is made up of two components, body and void.
4. Body is understood as atoms and their compounds.
5. The universe is infinite.
6. The atoms are infinite in number and space extends without limit.
7. Atoms of the same shape are infinite in number, but the variety of their shapes is indefinite, not infinite.
8. Atomic motion is constant and of two kinds.
9. Atoms share only three of the characteristics of phenomena: shape, weight, and bulk.

It will be seen at once that all of these propositions are fundamental to Epicurean physics. These formulations would be known verbatim by every student of Epicurus' system of the physical world.⁶⁰ It bears stressing that these are the only passages where the De Rerum Natura shows any considerable verbatim translation of the Letter to Herodotus. Elsewhere, comparison reveals only parallelism and coincidence of argument. All of the propositions translated by Lucretius are introduced by a short exordium which is good indication that they introduce a fundamental stage in his argument.⁶¹

These observations lead to a reevaluation of Lucretius' relation to his sources, and the conclusions they point to are perfectly in keeping with what is known about the methods and matériel of Epicurean instruction. It is crystal clear that Lucretius has translated the Greek of the Letter to Herodotus, but there is no absolute guarantee that this letter represents his original.⁶² What he has translated are the fundamental propositions (στοιχειώματα) of

Epicurean physics, and these would be a matter of memory for an Epicurean advanced in this system. There should be nothing surprising about this: the modern student of Physics or Chemistry commits to memory the Periodic Table at a very early stage. It seems that the student of Physics was even expected to remember the particulars of Epicurus' discussion of meteorology.⁶³

It is very possible that this letter does represent the language of Lucretius' original; it is just possible that it reproduces it from another source such as the Μεγάλη Ἐπιτομή. But the portrait of Lucretius composing with the rolls of Epicurus spread out constantly before his eyes is no longer completely convincing;⁶⁴ the stoicheiomata at least he must have had constantly before him, but in his mind's eye.

Taken together, these considerations suggest that whatever his source or sources for Epicurean physics, Lucretius was freed from a complete and slavish attachment to an original. He was free first by his verse which of necessity distanced him from any original and then by a mastery of the fundamental propositions of this system in the distillation of Epicurus' himself. The importance Epicurus attached to the ability to refer as a matter of reflex to the main statements of his doctrine is manifest in his insistence that his followers memorize the stoicheiomata in order to gain freedom from doubt.⁶⁵ Lucretius, in following his master in this, freed himself from a constraining devotion to any particular text. This is particularly true for the argument of the first two books of the De Rerum Natura where Epicurus' stoicheiomata render possible the arguments of the last four books. It might be that there is nothing regarding philosophy in the De Rerum Natura which does not have Epicurean authority,

but Lucretius' mastery of the whole of Epicurean physics - his 'pre-servitude' to the Greek - is decisive evidence that his poem does not unroll with a Greek papyrus.

(III)

Epicurus' Stoicheiomata

Lucretius translates Epicurus' stoicheiomata into the first two books of the De Rerum Natura in the language reproduced below. The text for four of these propositions is taken up in an Appendix.

[1]

Nothing is created out of nothing:

38.8-39

I 145-150, 159-160 (205)

Πρῶτον μὲν ὅτι οὐδὲν γίνεταί ἐκ τοῦ μὴ ὄντος·
πᾶν γὰρ ἐκ παντὸς ἐγίνετ' ἄν
σπερμάτων γε οὐθὲν προσδεόμενον.

Principium

nullam rem e nilo gigni divinitus umquam.

Nam si de nilo fierent, ex omnibu' rebus

omne genus nasci posset, nil semine egeret.

[2]

Nothing is reduced to nothing:

39.1-2

I 215-218, 237 (265-266)

Καὶ εἰ ἐφθείρετο δὲ τὸ ἀφανιζόμενον εἰς τὸ μὴ ὄν,
πάντα ἄν ἀπωλώλει τὰ πράγματα,
οὐκ ὄντων τῶν εἰς ἃ διελύετο.

Huc accedit uti quidque in sua corpora rursum
dissoluat natura neque ad nilum interemat res.

nam si quid mortale <e> cunctis partibus esset,
ex oculis res quaeque repente erepta periret.

haud igitur possunt ad nilum quaeque reverti.

[3]

The universe is made up of two components:
body and void:
39.6-40.2 I 418-428

Ἄλλὰ μὴν καὶ τὸ πᾶν ἐστὶ <σώματα καὶ κενόν>. σώματα μὲν γὰρ ὡς ἔστιν, αὐτὴ ἡ αἴσθησις ἐπὶ πάντων μαρτυρεῖ, καθ' ἣν ἀναγκαῖον τὸ ἄδηλον τῷ λογισμῷ τεκμαίρεσθαι, ὥσπερ προεῖπον τὸ πρόσθεν.

εἰ <δὲ> μὴ ἦν ὁ κενὸν καὶ χώραν καὶ ἀναφῆ φύσιν ὀνομάζομεν, οὐκ ἂν εἶχε τὰ σώματα ὅπου ἦν οὐδὲ δι' οὗ ἐκινεῖτο, καθάπερ φαίνεται κινούμενα.

Sed nunc ut repetam coeptum pertexere dictis
omnis, ut est igitur per se, natura duabus
constitit in rebus; nam corpora sunt et inane,
haec in quo sita sunt et qua diversa moventur.
corpus enim per se communis dedicat esse
sensus; cui nisi prima fides fundata valebit,
haud erit occultis de rebus quo referentes
confirmare animi quicquam ratione queamus.
tum porro locus ac spatium, quod inane vocamus,
si nullum foret, haud usquam sita corpora possent
esse neque omnino quoquam diversa meare.

[4]

Body is understood as atoms and their compounds:
40.7-9 I 438-486

Καὶ μὴν καὶ τῶν σωμάτων τὰ μὲν ἐστὶ συγκρίσεις
τὰ δ' ἐξ ὧν αἱ συγκρίσεις πεποίηται·
ταῦτα δὲ ἐστὶν ἄτομα καὶ ἀμετάβλητα.

Corpora sunt porro partim primordia rerum
partim concilio quae constant principiorum.
sed quae sunt rerum primordia, nulla potest vis
stinguere; nam solido vincunt ea corpore demum.

[5]

The universe is infinite:

41.6-10

I 958-864, 1001

Ἄλλὰ μὴν καὶ τὸ πᾶν ἄπειρόν ἐστι·
 τὸ γὰρ πεπερασμένον ἄκρον ἔχει·
 τὸ δὲ ἄκρον παρ' ἕτερόν τι θεωρεῖται·
 <Ἄλλὰ μὴν τὸ πᾶν οὐ παρ' ἕτερόν τι θεωρεῖται·>
 ὥστε οὐκ ἔχον ἄκρον πέρασ οὐκ ἔχει·
 πέρασ δὲ οὐκ ἔχον ἄπειρον ἂν εἶη καὶ οὐ πεπερασμένον.

Omne quod est igitur nulla regione viarum
 finitumst; namque extremum debebat habere.
 extremum porro nullius posse videtur
 esse, nisi ultra sit quod finiat; ut videtur
 quo non longius haec sensus natura sequatur.
 nunc extra summam quoniam nil esse fatendum,
 non habet extremum, caret ergo fine modoque.

omne quidem vero nil est quod finiat extra.

[6]

The atoms are infinite in number, and space
 extends without limit:

41.11-42.4

I 1008-1020

- (1) Bodies can not be finite
 and space infinite: 42.1-4 I 1014-1021
- (2) contrariwise, space can not be bounded
 and bodies infinite: 42.4-5 lacuna

Between lines 1013 and 1014 of the MSS a
 lacuna, detected by Marullus, must have
 contained the protasis to (1).

Ipsa modum porro sibi rerum summa parare
 ne possit, natura tenet, quae corpus inani
 et quod inane autem est finiri corpore cogit,
 ut sic alternis infinita omnia reddat,
 aut etiam alterutrum, nisi terminet alterum eorum,
 simplice natura pateat tamen immoderatum.

1013

- (2) εἴ τε τὸ κενὸν ἦν ὠρισμένον, οὐκ ἂν εἶχε τὰ ἄπειρα σώματα ὅπου ἐνέστη.
- (1) εἴ τε γὰρ ἦν τὸ κενὸν ἄπειρον, τὰ σώματα ὠρισμένα, οὐθαμοῦ ἂν ἔμενε τὰ σώματα, ἀλλὰ ἐφέρετο κατὰ τὸ ἄπειρον κενὸν διεσπαρμένα, οὐκ ἔχοντα τὰ ὑπερείδοντα καὶ στέλλοντα κατὰ τὰς ἀνακοπὰς.

nec mare nec tellus neque caeli lucida templa 1014
 nec mortale genus nec divum corpora sancta
 exiguum possent horai sistere tempus.
nam dispulsa suo de coetu material
copia ferretur magnum per inane soluta,
 sive adeo potius numquam concreta creasset
 ullam rem, quoniam cogi disiecta nequisset.
 (Cf. II 547-568, DO VI ii.)

[7]

Atoms of similar shape are infinite in number,
 but the variety of their shapes is indefinite,
 not infinite:

42.10-43.4

II 522-527 (cf. 478-480,
 496-499)

Πρὸς δὲ τούτοις τὰ ἄτομα ... ἀπερίληπτά ἐστι
 ταῖς διαφοραῖς τῶν σχημάτων· οὐ γὰρ δυνατόν γεν-
 εῖσθαι τὰς τοσαύτας διαφορὰς ἐκ τῶν αὐτῶν
 σχημάτων περιειλημμένων.

καὶ καθ' ἑκάστην δὲ σχημάτισιν ἀπλῶς ἄπειροί
 εἰσιν αἱ ὅμοιαι, ταῖς δὲ διαφοραῖς οὐχ ἀπλῶς
 ἄπειροι, ἀλλὰ μόνον ἀπερίληπτοι, εἰ μέλλει
 τις μὴ καὶ τοῖς μεγέθεσιν ἀπλῶς εἰς ἄπειρον
 ἐκβάλλειν.

Quod quoniam docui, pergam conectere rem quae
 ex hoc apta fidem ducat, primordia rerum,
 inter se simili quae sunt perfecta figura
 infinita cluere. etenim distantia cum sit
 formarum finita, necesse est quae similes sint
 esse infinitas.

[8]

Atomic motion is constant and of two kinds:

43.5-44

II 95-102 (I 952)

Κινοῦνταιί τε συνεχῶς αἱ ἄτομοι τὸν αἰῶνα,
καὶ αἱ μὲν εἰς μακρὰν ἀπ' ἀλλήλων διιστάμεναι,
αἰδὲ αὐτοῦ τὸν παλμὸν ἴσχυσαι,
ὅταν τύχῃσι τῇ περιπλοκῇ κεκλειμέναι
ἢ στεγαζόμεναι παρὰ τῶν πλεκτικῶν.

nimirum nulla quies est
reddita corporibus primis per inane profundam,
sed magis assiduo varioque exercita motu
partim intervallis magnis confulta resultant,
pars etiam brevibus spatiis vexantur ab ictu.
et quaecumque magis condense conciliatu
exiguus intervallis convecta resultant,
indupedita suis perplexis ipsa figuris.

[9]

Atoms share only three of the characteristics
of sensible things: Shape, weight, and bulk:

54.3-6

II 748-752

The proposition: 54.1-3

c.f II 730-733

Its demonstration:

Ποιότης γὰρ πᾶσα μεταβάλλει. αἱ ἄτομοι οὐδὲν
μεταβάλλουσιν, ἐπειδὴ περ δεῖ τι ὑπομένειν ἐν
ταῖς διαλύσεσι τῶν συγκρίσεων στερεὸν καὶ ἀδιάλυτον
ὃ τὰς μεταβολὰς οὐκ εἰς τὸ μὴ ὄν ποιήσεται.

Quod quoniam vinco fieri, nunc esse docebo

lacuna

omnis enim color omnino mutatur in omnis
quod facere haud ullo debent primordia pacto.
immutabile enim quiddam superare necessest,
ne res ad nilum redigantur funditus omnes.

These are not scrupulously literal translations and were not meant as such. The proposition that only shape, weight and bulk describe the atoms [9], does not seem to be translated by Lucretius' argument that color can not be regarded as a property of the principia. However, if the term color is substituted for the abstract ποιότης, it is easily seen that Lucretius has brought the formulation of Epicurus down to a level at once more concrete and more comprehensible. Qualitas, one of Cicero's most successful calques could not, from Lucretius' point of view, translate ποιότης. Accordingly, he gives this proposition a more concrete exposition in terms of color/nitor, and avoids the abstract discussion of "suchness."

These propositions coincide, in most cases, with those DeWitt represents as the Twelve Elementary Principles of Epicurean physics. It is worth remarking that all of these propositions are introduced in the first two books of the De Rerum Natura and that, with one exception [8], they follow the order of the exposition of the Letter to Herodotus. Only the last falls outside of what Epicurus marks off as the foundations of his Physics:

Ἡ τοσαύτη δὴ φωνὴ τούτων πάντων μνημονευομένων τὸν
 ἰκανὸν τύπον ὑποβάλλει τῆς τῶν ὄντων φύσεως
 ἐπινοίας. (45.1-2)

It is clear from the terms in which Epicurus presents the Letter to Herodotus that he has taken occasion here to give a general account of his physical system set forth in simple language, rudiment by rudiment.⁶⁶ Thus it would seem that these formulations, as they are stated here, and as they are translated in the De Rerum Natura, were original with this letter:

τοιαύτην τινὰ ἐπιτομὴν <συνέθηκα> καὶ στοιχείωσιν

τῶν ὅλων δοξῶν. (37.4-5) But there is no completely convincing evidence that these formulations can not go back to the *Περὶ Φύσεως*, the *Μεγάλη Ἐπιτομή*, or a work mentioned in Diogenes Laertius as the *Δώδεκα Στοιχειώσεις* (X 44.9). Nonetheless, there remains the very clear indication that in writing the Letter to Herodotus, Epicurus was meeting a need for a simplified statement of his system in its most general outlines.⁶⁷ It is very possible, therefore, that the language in which Epicurus formulated the *στοιχειώματα* originates with the Letter to Herodotus. By contrast to the obscurity resulting from the compression of this letter, the *Περὶ Φύσεως* shows, in as much as it is possible to judge from the few extensive fragments, a diffuseness which often makes it impossible to determine Epicurus' precise argument.

If Lucretius got the propositions translated above from this letter, it is quite likely that he was free from it for long stretches of his exposition, for he best represents that second class of reader for whom Epicurus intended his epitome:⁶⁸

Καὶ τοὺς προβεβηκότας δὲ ἱκανῶς ἐν τῇ τῶν ὅλων
ἐπιβλέψει τὸν τύπον τῆς ὅλης πραγματείας τὸν
κατεστοιχειωμένον δεῖ μνημονεύειν.

(IV)

Epicurei and PreSocratics

After Epicurus come Epicureans, and from time to time it has been argued that Lucretius knew Epicureanism from the activity of a contemporary school in Italy.⁶⁹ There are two striking facts about this approach to the De Rerum Natura. First, if this be so, Lucretius himself gives no reason to believe

that he depended on anyone but Epicurus for his interpretation of the physical world, nor are there any writings contemporary with Lucretius which show unambiguously his debt to those later writers who have come to be known collectively as "die jüngere Epikureer." While their activity in Southern Italy is a fact supported by a good many impressive indications, there is only the flimsiest circumstantial evidence to connect them with the De Rerum Natura. Second is the fact that Lucretius' theme is precisely de rerum natura, while the interests of the Epicurei, especially as they are represented in Philodemus, are reflected in writings on poetry, on rhetoric, music, the history of philosophy and generally on subjects having some bearing on Ethics. It does not seem that they showed any lively interest in physics. Where Physics is considered, as it is occasionally in Philodemus' Περὶ Σημειώσεως, it is in its connection with the Epicurean Kanon (cf. DL X 30.6-7) and here it has been noted that Lucretius was not abreast of what might be considered recent developments in Epicureanism.⁷⁰

It is unfortunate that the proponents of the intriguing argument that the De Rerum Natura owes a debt to contemporary Epicurean literature have, embarrassed by a lack of any real evidence, produced demonstrations which do them little credit and effectively discredit a hypothesis which is at least worth consideration.⁷¹

Since they produce very little Greek and advance our understanding of neither Epicurus, Lucretius, nor Epicurean physics, these arguments can not be considered in detail in a study such as this. One argument, stamped with the authority of the name of Hermann Diels, illustrates the methods and results

of source criticism when forced to operate without surviving sources. In his Elementum Diels assembles and discusses examples of Lucretius' use of the paradigm of letters (στοιχεῖα /elementa) as a model for the various combinations of atoms in compound and their variegated products. Noting that the term στοιχεῖα is not used by Epicurus as applied to the atoms, Diels argues that Lucretius could only have been familiar with this exemplum from a source which is necessarily later than Epicurus and Epicurean.⁷² But Diels' logic is not entirely persuasive since it completely excludes a possibility which he seems more prepared to consider at a later date. This is the possibility that Lucretius was familiar with the exemplum from a source earlier than Epicurus.⁷³ Formally this possibility can not be disregarded for there is no reason to assume that Lucretius' Greek experience was exclusively Epicurean.⁷⁴ It is surely possible that Lucretius knew the elementum paradigm from Democritus where it seems to have originated; it is possible too that the paradigm was inherent in the metaphor of stoicheia.

This particular query prompts a more general question which arises from a reading of the De Rerum Natura itself. Did Lucretius have a first hand knowledge of the earlier physicists?

This question is one of considerable practical importance for a study of Lucretius' translation of Greek philosophy. If Greek philosophy is represented exclusively by the atomism of Epicurus, and earlier physical theory was known to Lucretius only in the context of Epicurean polemic, it is hardly possible to speak meaningfully of Lucretius' original. We have Die Fragmente der Vorsokratiker, but we no longer have Epicurus' treatment of earlier

physiology. It is possible that Lucretius' knowledge of the dark discoveries of the Greeks was school knowledge deriving from Epicurean polemic with the earlier physicists. If this is the truth of the matter and Lucretius' knowledge of earlier physiology comes entirely from hostile Epicurean sources, there is very little to be learned from his representation of Epicurus' predecessors since hardly anything remains of Epicurean polemic. But if Lucretius knew of earlier physical theory from the writings of the Pre-socratics themselves, there is a basis for judgment of his interpretation of Greek philosophy as it reached beyond the atomism of Epicurus.

It has been seen that in presenting his task as a translator Lucretius spoke of the Graiorum obscura reperta. The plural Graiorum is important for it shows that the philosophical program of the De Rerum Natura was not limited to an exposition of Epicureanism, but included the discoveries of the Greeks generally. In the proemium these discoveries are called obscura; later in Book I Lucretius speaks of the praeclara reperta of Empedocles (I 732). It has struck many readers of the poem as incongruous that Lucretius should praise Empedocles in terms reminiscent of his praise of Epicurus, when Epicureans generally went to great pains to damn him and his theory of the principia. Not long after Epicurus' death his pupil Hermarchus wrote an attack against Empedocles in 21 books (DL X 25), and Empedocles takes his place in rank with his fellow physicists in the Epicurean polemic against earlier doctrines on the elements.⁷⁵

Lucretius also praises Democritus. Once he is obliged to disagree with him in his teaching on the composition of the soul (III 371), but again he

speaks of him in the same terms in (Democriti quod sancta viri sententia ponit) to affirm his explanation of the movement of the sun and the stars (V 620).

This too might be thought surprizing independence of judgment for an Epicurean, for Democritus was contradicted on many points by Epicurus who wrote a separate tract against his greatest predecessor.⁷⁶

In spite of the spirited praise Empedocles is given in the first book of the De Rerum Natura, it would seem that his achievement is magnified only to crumble in Lucretius' critique of his fundamental teaching on the principia. It is something of a shock to come to the terms in which Lucretius represents the teaching of Empedocles who seems to have been "scarcely born of human seed." According to the analysis of Giussani, it is not Empedocles Lucretius is criticizing here, but the school of "transformationalists" who are disguised by his name (Studi Lucreziani) (85-95). In Giussani's phrase, Empedocles serves as no more than a kind of hat rack (*commune attaccapanni*) on which Lucretius (or Lucretius' source) hung the errors of others, principally Aristotle. Giussani and other critics of Lucretius' attack on the theory of the four elements speak of 'Lucretius', but they make it quite clear that they mean Lucretius' source.⁷⁷

It is more difficult to name this source than to evoke it. Bailey appeals to the Μεγάλη Ἐπιτομή which he calls "Lucretius' usual source." The fragments of Epicurus' Περὶ Φύσεως are often tendentious in character,⁷⁸ and Diogenes states that in addition to his single pamphlets against his rivals, Epicurus took the trouble to compose an 'epitome against the physicists'. (DL X 27).

If Arrighetti is correct in his interpretation of a fragment from Book XIV

of the *Περὶ Φύσεως* it is very likely that Empedocles' theory of the four elements figured prominently in Epicurus' discussion here (*Epicuro* 551-552). Indeed, Lucretius' presentation of Empedocles seems sufficient to identify the theory discussed in this fragment. In both cases it is clearly more a question of a school of thought than Empedocles himself.⁷⁹

Principiis tamen in rerum fecere ruinas
at graviter magni magno cecidere ibi casu.
(I 740-741)

seems to be a version of the more prosaic οἱ μὲν γὰρ τοῖς μὲν στοιχείοις

ἄρμαρτάνουσιν of the Herculaneum papyrus. Lucretius' entire treatment of this theory bears marks of an Epicurean review of earlier physical theories.

The order in which he takes up Heraclitus, Empedocles and finally Anaxagoras, can be seen in the rapid treatment of earlier physics in Diogenes of Oenoanda.

The scheme of Empedocles and following him Anaxagoras (τῆ μὲν ἡλικίᾳ πρότερος ὢν τούτου, τοῖς δ' ἔργοις ὕστερος goes back to, and most probably derives from, *Metaphysics* A.⁸⁰ The verbs *relinquunt* (I 743) and *tollat* (I 701) sound very much like the doxographic ἀπολείπουσι and

ἀναίρει, and *Acragantius* ... *Empedocles* (I 716) is reminiscent of the style of these handbook surveys.⁸¹ It can even be argued that

Lucretius' evocation of Empedocles' vaunt ἐγὼ δ' ὑμῖν θεὸς ἄμβροτος οὐκ-ετι θνητὸς πωλεῦμα: (DK 31 B112, 4-5) in *ut vix humana videatur stirpe creatus* (I 733) came not from a first hand knowledge of the writings of the man he praises, but derives from Epicurus or Epicurean literature.⁸²

The case for an Epicurean polemical tract as a source for Lucretius' discussion of Empedocles and the theory his name represents has been over-

stated, but, all in all, it is plausible if it is not taken to exclude a first hand knowledge of Empedocles' philosophical poem. At the same time Lucretius treats his greatest predecessor in philosophical poetry in a manner which is both tendentious and, it would seem, doxographic, he betrays a deeper knowledge of the philosophy whose foundations he is attacking.

Consider Lucretius' representation of Empedocles' $\rho\iota\zeta\acute{\omega}\mu\alpha\tau\alpha$.

Earlier in Book I, the traditional four elements are named as aer aqua terra vapores (I 567), and again as aera . . . igni terramque liquori (I 713). Just as he is introducing Empedocles' principia these become igni terra atque anima . . . et imbri (I 715). Further on, as Lucretius moves on from praise to polemic, he speaks of res mollis rarasque: aera solem imbrem terras (I 744). For this last enumeration the MSS O and Q read ignem for imbrem, superficially a lectio facillior. Bailey emends to imbrem, the reading quoted above, and is surely right. Ὄμβρος was one of Empedocles' many names for the more prosaic ὕδωρ .⁸³ Christ, however, confident in ignem and needing a fourth element, emended solem to rorem. Rorem is a Latin word, but solem is guaranteed by Empedocles who gives πῦρ the name of its most striking manifestation.⁸⁴

I have chosen Lucretius' explicit discussion of Empedocles' theory of the principia to suggest that where Lucretius might reasonably be thought to follow the terms of an Epicurean tract, he shows independence both in his enthusiastic praise of Empedocles and what seems to be a deeper knowledge of Empedocles' poem. In the following discussions, particularly in the discussion of Lucretius' cosmology in Book V, it can be argued that if Empedocles

must be confessed to err principiis . . . in rerum (I 740), his depiction of the physical world represents in a sense the poetical counterpart of the Epicurean concept of nature as it appears to the eye and not the mind. Empedocles is honey disguising the bitter draught of Epicurus' philosophical prose. In Books I and II of the De Rerum Natura Lucretius' keeps close to the text of the Letter to Herodotus. But once the physical world is founded in its invisible and neutral structure, Empedocles begins to assert his due influence on the thought and expression of Lucretius.

W. Kranz, who has written the most detailed investigation of the relation between the Περὶ Φύσεως and the De Rerum Natura, argues an even stronger case. He believes that Lucretius modelled his De Rerum Natura on Empedocles' Περὶ Φύσεως and often appeals to Lucretius to settle questions as to the disposition of his model.⁸⁵ It is interesting to note that many of those passages Kranz singles out in the De Rerum Natura as translations from Empedocles are in fact translations from Epicurus.⁸⁶ The interesting point is that Epicurus and Empedocles seem to agree on some matters so closely that their arguments can be confused as they appear in Lucretius' poetic version. The same observation holds for the overall organization of the argument on Nature where the Letter to Herodotus, the De Rerum Natura, and the Περὶ Φύσεως agree in taking up first the constituents of the physical world, then the soul and human psychology, and last cosmology and meteorology.

Starting from Lucretius' statement on his fidelity to Epicurus, and noting his enthusiastic praise of Empedocles, a study of the De Rerum Natura in terms of translation shows a debt to both. This chapter has not been written

as a survey of Lucretius' contacts with Greek philosophy, and consequently, it has given an inadequate statement of Lucretius' Greek sources. The names of Heraclitus (I 635-704), Anaxagoras (I 830-920), Strato of Lampsacos (I 370-383) and Aristoxenus (III 98-135) deserve mention in any survey of Lucretius' contacts with Greek thought.⁸⁷ Of these, Lucretius mentions Heraclitus and Anaxagoras by name, and Strato and Aristoxenus can be plausibly identified as the foremost representatives of the views he attacks in passing. All of these names are the names of Lucretius' antagonists and the polemical context in which they emerge is not a guarantee for an accurate representation of their doctrine. Lucretius' critique of Heraclitus seems too deformed to figure in the testimonia for Heraclitus in Die Fragmente der Vorsokratiker, and F. Wehrli does not consider Lucretius in presenting the continuum of Strato or the psychology of Aristoxenus.⁸⁸

Only in the case of Epicurus and Empedocles, and Thucydides, can Lucretius' Latin be studied in a Greek context, and only with such a context can Lucretius' Latin be seen as an interpretation of the Graiorum obscura reperta.

CHAPTER III

Greek Physis and Epicurean Physiology

For the modern reader Lucretius' poem begins with its title - De Rerum Natura. If he has it in translation, he starts with either On the Nature of Things or On the Nature of the Universe. But it is by no means certain that Lucretius' ancient reader knew the poem as De Rerum Natura, although he might have readily described it as such. In a letter to his brother Quintus, Cicero speaks of Lucreti poemata, but says nothing further to suggest a title. In this same letter another philosophical poem (Sallustius' Empedoclea) is mentioned by its title.⁸⁹

Although the poem is announced as De Rerum Natura in none of the MSS (with the possible exception of Q),⁹⁰ it clearly announces itself as such, and by signalling its argument as de rerum natura, it alligns itself directly with Epicurus, Empedocles, and the whole of early Greek physiology.⁹¹ Unlike Cicero's Aratea and Sallustius' Empedoclea, Lucretius' De Rerum Natura declares itself a continuation of a tradition and not a Roman copy, an Epicurea. In Greek the title and the investigation Περὶ Φύσεως had a long established tradition, but what its Latin equivalent might have suggested to a reader unfamiliar with Greek physical speculation is difficult to determine. Natura alone, or natura determined by rerum, could hardly have conveyed to a Roman what physis suggests in Greek, because it had then a significance which corresponded to only the most elementary meanings of the word in Greek.⁹²

What is important to notice is that Lucretius introduces the concept of physis/natura as it was most familiar in Latin; that is, κατὰ τὴν πλείστην φορὰν. The phrase rerum natura occurs first as a summation of all that has been said of Venus in the first 20 verses of the poem:

Quae ... rerum naturam sola gubernas (I 21).

Without the compass of Greek, Lucretius' Roman reader is brought from rerum natura in the sense of birth and growth⁹³ to a conception of nature which seems to derive as much from Presocratic thought as from the atomism of Epicurus. By the time Lucretius has launched into the physical argument of his poem proper, his reader has been given a good notion of what φύσις and φυσιολογία represent in Greek and what they will come to mean in Latin.

When, in line 25, Lucretius repeats the phrase rerum natura to describe the argument of his poem, his commentators set out what they take him to mean generally by rerum natura. By anticipating the range of meaning given res, natura, and rerum natura in the poem, Munro, Bailey, and others lose sight of Lucretius' manner of introducing and developing a theme alien to Latin poetry. Lucretius reckons with Ennius alone whose dream vision of nature expounded in the Epicharmus made him both a predecessor and a dangerous rival to the truth.⁹⁴

Lucretius first introduces natura in the familiar sense of birth and genesis. This is the domain governed by the invisible power of alma Venus, Aeneadum genetrix. Lucretius' invocation gives a powerful statement of this: exortum (I 5) and dias in luminis oras exoritur (I. 22) give in fact the common Latin equivalents for the Greek γένεσις and γίγνεται.⁹⁵ It is perhaps

significant that Lucretius phrases his argument in terms reminiscent of Paramenides, Empedocles, and even of Cleanthes in his Hymn to Zeus,⁹⁶ but almost completely alien to Epicurus for whom physis is almost never Physis.⁹⁷

As he progresses into his argument, Lucretius restates his theme in somewhat larger terms, and speaks of the vera ratio (I 51) to which he means to introduce his reader. New in the philosophical program announced in lines 54-61 is the argument de summa caeli ratione deumque and the shift in emphasis from the broad vision of the Spring (II 31-33, V 737) of the cycle of genesis to the material out of which Natura (and no longer Venus) creates and sustains all things, and into which she resolves them. Natura, like Venus, is represented as an agent, and the stuff out of which she brings things into being Lucretius calls materies (I 57), genitalia corpora (I 57), and semina rerum (I 58). All of these terms keep close to the primitive meaning of physis as birth and increase, and are immediately intelligible in their context.⁹⁸

Primordia (I 55) and corpora prima (I 61) are freer from the associations of genesis and are Lucretius' more neutral equivalents for the archai of Epicurean physics. Lucretius takes pains to stamp these terms as bearing a special sense (quae nos . . . appellare suemus); but he goes further to suggest that the two terms not immediately comprehensible from the context of the proem are appropriate to what they describe: et haec eadem usurpare (suemus) corpora prima, quod ex illis sunt omnia primis.

After setting out the philosophical program of the De Rerum Natura, Lucretius leaves his argument first to stress the achievement of its founder

(I 62-79), and then to argue its necessity (I 123). In direct contradiction to the omnem rerum naturam the spectre of Homer expounded to Ennius in his dream vision (I 112-126), Lucretius states his argument for a second time (I 127-135). In this restatement, the argument has taken on a fuller scope with the demonstration of its necessity. Where a comprehensive account of the heavens and gods had been announced before (I 54, cf. ad Hdt. 79.4), both gods and celestial phenomena are included in the rubric superis de rebus (I 127, cf. I 62-65) which is Latin for περὶ τῶν μετεώρων. What is especially apparent in this second syllabus is a shift in emphasis from a concern with the material for generation to a concern for the laws of heaven and the human soul. The stress is accordingly placed on causation (cf. V 177, 772, ad Pyth. 97 6):

solis lunaeque meatus
qua fiant ratione, et qua vi quaeque gerantur
 in terris, tunc cum primis ratione sagaci
unde anima atque animi constet natura videndum.
 (I 128-131)

New is the argument on the origin or nature of the soul (animai in I 112, anima/ animus in I 131, cf. III 35-36, 417-424) and the explanation of the simulacra which seem to guarantee the belief in an afterlife and divine influence over the soul in death. It is clear that by the nature of the soul (anima/ animus), Lucretius sees the problem as posed in two alternatives: either the soul is born and is thus mortal, or it enters the body at birth and is thus pre-existent (cf. Tusc. I 18). Natura, in the terms of these alternatives, can be qualified by nata which in the course of the poem will come to equal φθαρτή.⁹⁹ This is the alternative argued with such ardor in Book III of the De Rerum Natura; it challenges the more disquieting view of the soul which is that of

Ennius: immortalis natura animai constat et in corpus nascentibus insinuatur (III 670-671). In the De Rerum Natura the adjective immortalis properly describes only the atoms, the void, and the universe, and, as the soul is concerned, death (III 869).

Conscious of the poverty of his native speech, Lucretius has introduced his theme so as to enrich Latin with an exposition of the Greek tradition of physis and physiologia: first in terms of generation which was his easiest avenue to a larger conception of Natura as the invisible force which brings things into being, sustains them, and reduces them into their first beginnings. Natura is also introduced as the visible and bounded world of our experience, the frame of the world (I 71, cf. I 321). As it describes the gods (I 44) and the human soul, natura suggests the constitution of that which is immortal and that which is mortal. Although Lucretius does not include the gods in his definition of those three things which can be properly regarded as eternal (III 806-818), the soul is obviously the "kind of thing" (natura) which can be dissolved by the blows of matter. Omnis per se divum natura translates Epicurus'

Τὸ μακαρίον καὶ ἄφθαρτον , and more nearly approaches Epicurus' usage than any of the other terms of the proem.¹⁰⁰

But the understanding of the physical world and its invariable processes is not the enterprise of theoria, abstract and detached. Nature as it is represented in myth (the fama deum of I 68) inspires terrors which only a clear grasp of its deep fixed law can dispel. This is the proper and only function of Epicurean physiology, and to convey this to his Roman reader Lucretius directly opposes Ennius' account of the afterlife with his own account of the nature of

things.¹⁰¹

It is this reason, or reasoning, which is announced in the vera ratio of the system Lucretius promises to put before his reader. It is a system which might seem impious in its beginnings (I 82, cf. 150), but one which will steel the mind against the terrors of religion itself (cf. I 110, 128). Ratio as it first appears in the poem might be translated by "true account" (I 51), and the, perhaps, as "the highest law" or "comprehensive account" (I 54, cf. ad Hdt. 79.4). Here the placement of summa caeli ratione deumque before rerum primordia shows precisely what is stressed by Epicurus: the impulse to physiology is not theoria, abstract and indifferent, but the moral necessity of overcoming fear, anxiety, and all other forms of ταραχή. Accordingly, what physiology - Epicurean physiology - affords is not an abstract account of physis, the natural world, but a ratio and facultas restandi (I 110, cf. III 45).

Thus, while the concept of nature which Lucretius develops in the poem is not distinctively Epicurean, his statement of the impulse to physiology is explained by premises which are exclusively Epicurean:

Hunc igitur terrorem animi tenebrasque necessest
non radii solis neque lucida tela diei
discutiant, sed naturae species ratioque.

(I 146-148)

These lines are repeated thrice again in the poem (II 59-61, III 91-93, VI 39-41), and on each occasion they provide, as they do here, the bridge from the ethical premises of physiology to physiology itself. In Lucretius' formulation which introduces the logical foundations of Epicurean physiology, natura and ratio come together to express what Epicurus meant by φυσιολογία.

Lucretius does not translate the Greek word by Cicero's calque naturae ratio; rather he renders the concept by naturae species ratioque.¹⁰²

Cuius (I 149) demonstrates that for Lucretius naturae species ratioque cohere in one close-knit concept which can not be broken down into theoria and physiologia.¹⁰³ Epicurus does, in fact, speak of ἡ περὶ φύσεως θεωρία,¹⁰⁴ but by this he means speculation guided by the logical premises of his physics. In Lucretius, as in Latin generally, species has the force of outward appearance (except as it translates ἰδέα). Bailey, who understands the phrase as I would, translates "the outer view and inner law of nature." The point at issue here is that for Lucretius, as for Epicurus, such a formulation is possible given the source of all knowledge in the experience of the senses. Nature is full of voices and instruction. Very possibly Lucretius' species reflects the ὄψις of Anaxagoras' Ὅψις τῶν ἀδήλων τὰ φαινόμενα, but the principle itself was a fundamental tenet of the more pragmatic of the physicists.¹⁰⁵

From the logical and poetical development of this principle in the De Rerum Natura, it is clear that Lucretius has arrived at the perfect expression of Epicurean physiology whose unshakable foundation is the evidence of our senses: πάντων κρηπίς καὶ θεμέλιος ἡ ἐνάργεια (247 Us). Thus, in establishing the theoretical truths concerning that class of things which Epicurus marked off as ta adela, it is possible for Lucretius to speak of the compulsion of nature and true reasoning as if they were one: sed vera tamen ratio naturaque rerum cogit (I 498-499). Here, as in I 149, the world of the senses and the world which is accessible only through reason coincide. Elsewhere in the De Rerum Natura, reason the visible world are seen as distinct,¹⁰⁶

but, in Lucretius' exposition of his argument, they telescope into a single concept to express the Epicurean view of physiology.

CHAPTER IV

The Stoicheiomata (Book I)

(I)

The Logical Foundations of Epicurean Physics (I 150-264)

Between the first 148 lines of the De Rerum Natura and the introductory section of the Letter to Herodotus (35-38.8) there are few, but significant parallels.¹⁰⁷ What distinguishes the two introductions in terms of Epicurean doctrine is that where Epicurus tends to stress his Kanon, or rules for the conduct of philosophical discourse, Lucretius brings out in a very forceful presentation the ethical impulse to physiology.

Both Epicurus and Lucretius begin their exposition of Physics with the logical foundations of physiology. Lucretius translates the first and most important of Epicurus' στοιχειώματα principium ... nullam rem e nilo gigni divinitus umquam [1]. To Epicurus' concise formulation, Lucretius has added the two adverbial notions of divinitus and umquam. Of these, umquam is implicit in the immediate context of the Letter to Herodotus,¹⁰⁸ but divinitus is clearly Lucretius' addition. It is an addition which comes directly from the ethical premises of the proem and reasserts the end of physiology. In its context it explicitly contradicts the Pythagorean scheme of Ennius (I 116), and it is interesting to note here Lucretius' keen awareness of the anti-theological implications of the most basic principle of Greek physics. The vera ratio is a ratio which accounts for the happenings of the physical world without the interference of the gods (opera sine divum, I 155); de nilo is implicitly the

equivalent of divino numine.¹⁰⁹

Lucretius' demonstration of this proposition is conducted by contra-
position and is based on the Greek of the Letter to Herodotus where Epicurus'
formulation assumes the protasis explicit in Lucretius' version.

Nam si de nilo fierent, ex omnibu' rebus
omne genus nasci posset, nil semine egeret.
(159-160)

Lucretius has reproduced in Latin the logical form of his Greek original.
By converting the proposition nil posse creari de nilo (I 156) to the premise of
an unreal condition, we see that the argument is based ultimately on the
Epicurean appeal to the confirmation of experience and not the formal contra-
position (ἀνασκευή) of Stoic logic.¹¹⁰ Thus, Lucretius preserves the logical
form which is peculiar to the argument of Epicurus. The sequence of rhetorical
adynata which are produced to show the absurdity of the premise that all things
can spring up at random has its justification in the test of the testimony of
experience (ἐπιμαρτύρησις or ἀντιμαρτύρησις). The fittest expression
of the contradiction of a proposition by an appeal to the verdict of experience
is the impossible conclusion of a condition contrary to fact. Accordingly,
Lucretius bares the inherent absurdity of the premise ex omnibu' rebus omne
genus by arguing from what usually or always happens and disregarding the
alternatives of formal logic. Lucretius' logic is a logic Cicero despised but,
granting the Epicurean criteria for truth, a demonstration of nec solerent (I 165)
is the equivalent of nequeunt (I 172).

From I 159-214, where Lucretius is arguing from contraposition, I
count 20 verbs in the imperfect subjunctive, all of which function in unreal

conditions. This count can be taken as a crude index to the importance in the De Rerum Natura of the Epicurean appeal to the tribunal of experience. Lucretius has not only reproduced the content of Epicurus' οὐδὲν γίνεταί ἐκ τοῦ μὴ ὄντος ; he has reproduced, in terms more explicit than those of Epicurus' Greek, the logical form of his original.

From the point of view of Epicurean Physics it is as important to know that nothing can be reduced to nothing as to know that nothing comes of nothing. This is the argument of Epicurus' second proposition: "if what disappears were to perish into nothing (εἰς τὸ μὴ ὄν), all things would have been destroyed, since there would exist nothing into which they could be dissolved." Lucretius has translated this proposition in a manner which brings over the substance of the argument in Greek [2]. It is apparent that he has also translated Epicurus in a manner which brings out - in anticipation - some of the characteristics of the Epicurean archai.

In the first and fundamental propositions of his physics, Epicurus has given an indication of the special reasons why nothing can be created out of nothing or reduced to nothing. The form of his demonstration (that of a condition contrary to fact) stresses, by contrast, those conditions for generation or destruction which are in strict keeping with fact. In these initial propositions Epicurus' argument is extremely compact. Compact as it is, however, it contains the logical germ which Lucretius fully develops in his own arguments.

For the first of these propositions Epicurus has produced an argument which is, in its form, significantly different from earlier formulations of the principle: οὐδὲν γίνεταί ἐκ τοῦ μὴ ὄντος.¹¹¹ The contrapositive

assumption that anything can spring up from anything entails the peculiar assumption that genesis, in our experience, does not require seeds. Lucretius' nil semine egeret translates σπερμάτων γε οὐθὲν προσδεόμενον, his specific arguments evolve from what is implied in Epicurus' σπέρματα. Thus he argues that omne genus (and not omne = πᾶν) can not arise at random, because it is manifest from our experience that generation requires fixed seeds (semina certa; compare mater/materies certa I 168, 203). But generation is even more exacting; it requires favorable seasons of the year (I 174, 178, 192), fertile soil, and in some cases, cultivation. Lucretius' conclusion is, therefore, more ambitious than the naked assertion of the proposition: nil posse creari de nilo (I 155). Making fully explicit what is implicit in σπερμάτων γε οὐθὲν προσδεόμενον, Lucretius concludes:

nil igitur fieri de nilo posse fatendumst
 semine quando opus est rebus quo quaeque creatae
 aeris in teneras possint proferrier in auras.
 (I 205-207)

The same development of a logical germ contained in the Greek of Epicurus can be observed for the argument that proves that nothing can be reduced to nothing. In Epicurus' second argument there is a striking agreement between οὐκ ὄντων εἰς ἃ διέλυτο and σπερμάτων γε οὐθὲν προσδεόμενον. Fixed seeds are as necessary for dissolution as for generation. Making explicit what is implicit in the Greek of Epicurus, Lucretius, who has already established the necessity for certa semina rerum, goes a step further to show that these seeds must be indestructible. Destruction of a thing is not its utter annihilation (εἰς τὸ μὴ ὄν/ad nilum), but rather dissolution into its parts

(sua in corpora). The semina certa are accordingly qualified as aeterna (I 221, 236), and, in as much as they can be regarded as the corpora materialia, matter itself is eternal (I 245).

(II)

Lucretius' Introduction of the Epicurean Archai

Where the Letter to Herodotus continues with a statement that ALL is unchangeable and consists of bodies and void, Lucretius prepares for the exposition of this imposing proposition by introducing the necessary existence of invisible bodies (caeca corpora) and the void (inane) as it is dispersed in bodies (in rebus). Such a preparation seems necessary in both cases since Lucretius is speaking, technically, of a hidden matter. For his demonstration that caeca corpora exist (I 265-328) and that bodies are not completely solid, but contain an admixture of void (I 329-369, 370-397), there is little in the Letter to Herodotus to fix the terms of Lucretius' exposition.

Given the tradition of Greek 'physiology', it is doubtful that Epicurus thought it necessary to prove that invisible bodies exist, although he did feel the need to deny the possibility of visible atoms.

Although Lucretius' Latin can be confronted with no extensive Greek texts, it is possible to determine the Greek equivalents for some of the terms introduced here which, although they play a part in Lucretius' exposition, are never fully defined.

Τὰ ἀόρατα; Τὰ ἄδηλα; Τὰ φαινόμενα

The most important of these terms is corpora caeca which Lucretius opposes to visible bodies (aperto corpore qui sunt, I 297). From the constant association of the caeca corpora with the verbs videri, usurpare (oculis), and cernere, it is clear that they describe ἀόρατα rather than the more general term τὰ ἄδηλα, (or τὸ ἄδηλον) which is a category including τὰ ἀόρατα (ad Hdt. 80.5). For τὰ ἄδηλα (or τὸ ἄδηλον) there is a fix in the Letter to Herodotus which establishes Lucretius' equivalent as occultae res [3]. And, if what has been argued in Chapter I is correct, the adjective obscura in Lucretius' Graiorum obscura reperta also denotes τὰ ἄδηλα - principally the principia and inane.

In Epicurus, τὰ ἀόρατα, or the very nearly equivalent τάφανῆ, do not exclusively qualify the atoms, nor are they themselves qualified. Lucretius, however, by calling invisible bodies corpora caeca, introduces an ambiguity which is absent from the Greek. In its essentials the structure of the physical world is 'blind' because we are blind to it (I 268, 320). But caeca as it qualifies corpora takes on a somewhat different meaning when the atoms are seen in motion. Once set in motion they are caeca, even as they are seen imaginatively as motes dancing in the rays of the sun, since they are pitted in a blind and relentless conflict.¹¹² in the vastness of space (II 114-141). The analogy of these invisible particles seems to have been the property of atomism,¹¹³ but Lucretian is the vision of the atoms locked in eternal conflict and impelled ceaselessly by blind blows in the night which lies below our vision.

It is the visible world of the Lucretian simile which opens the only avenue to concepts such as those of the Epicurean archai - the corpora caeca

and the inane: περὶ τῶν ἀδήλων ἀπὸ τῶν φαινομένων χρὴ σημειοῦσθαι (DL X 32.8-9). In Lucretius there is no single equivalent for the Greek passive participle τὰ φαινόμενα . Res, aperto corpore qui sunt, and phrases such as ante oculos and in rebus apertis (cf. ἐν τοῖς φαινομέν^{-οις}) all convey the term in Latin.

Σημεῖα Σημείωσις

Binding τὰ ἀδήλα to τὰ φαινόμενα is the process of thought which contemplates the obscure and imperceptible through the indications of our immediate experience (cf. ad Hdt 38). When they are so used our perceptions are transformed into σημεῖα, which, to borrow the expression of Philodemus, put us on the track of the invisible -εἰς ἴχνος τοῦ ἀδήλου - (ΠΣ. XX120, XXXIX 2). Precisely how such indications are to be isolated and used is a problem of the Epicurean Kanon to which Philodemus devoted his Περὶ Σημειώσεως. This cardinal term has its equivalent in Lucretius, but it is so transformed that it is not easily recognizable as such. After giving proofs for the assertion that void exists in bodies, Lucretius leaves his argument with a simile:

verum animo satis haec vestigia parva sagaci
sunt per quae possis cognoscere certera tute.
namque canes ut montivagae persaepe ferai
naribus inveniunt intectas fronde quietes,
cum semel institerunt vestigia certa viai,
sic alid ex alio per te tute ipse videre
talibus in rebus poteris caecasque latebras
insinuare omnis et verum protrahere inde,
(l 402-409)

Here, as often in the De Rerum Natura, Lucretius has illustrated Epicurus' 'sober reasoning' by a simile which puts the matter vividly before

the reader's eyes. The exempla given in I 348-367 are now seen in their proper function. To the quick and active intelligence the seepage of water through rocks and the penetration of barriers by sounds are sufficient indications that there must be a mixture of void in things. Lucretius' examples are accordingly animo satis . . . vestigia parva sagaci, and vestigia translates σημεῖα (cf. II 123-124).¹¹⁴ Transformed into the prey of the active intelligence τὰ ἄδηλα hide in their caecae laterbrae. This imaginative conception might seem purely Lucretian. Curiously, it is not; in Epicurus' usually austere prose the process of inference is seen as a tracking (ἵχνευσίς);¹¹⁵ a metaphor dead or moribund in Greek has been revived in Lucretius' Latin translation, and what is implicit in metaphor becomes explicit in simile.

In the Letter to Herodotus the word atomoi does not make its appearance until Epicurus has advanced deep into the distinctions which prepare for the concept of the indivisible and indestructible units out of which compounds arise. The first of these is that by which the All (τὸ πᾶν = omnis natura) is analysed into its only independent components: bodies and void. Following on this twofold division into the only things which can be conceived in isolation.¹¹⁶ is the further distinction which resolves the diversity of the sensible world and the abstractions of language into what are termed the συμβεβηκότα and συμπύματα of body and space. Λεγόμενα is a qualification introducing this pair of technical terms which figure prominently in Epicurus' later and more detailed discussion of 'properties' and 'accidents'. It will be seen that this discussion is closely integrated with Epicurus' presentation of the soul as a σῶμα λεπτομερές.

In considering the ordering of these distinctions in Epicurus and Lucretius, it is significant to note that Lucretius, although he follows the order of the Letter to Herodotus in taking up bodies and void, properties and accidents, anticipates Epicurus in his exposition of time (I 459-482). Epicurus discusses the status of time in his later refinement of the concept of τὰ συμπύματα (ad Hdt. 68.6-71.11) - a passage which coheres closely with Lucretius' treatment of coniuncta and eventa.

In attempting to grasp Lucretius' meaning here it is essential to remember that since he has not yet reached the concept of the atoms proper, in speaking of corpus and its properties and accidents, he is speaking of bodies which have permanent characteristics which the atoms do not share (cf. I 599-634). Thus he can speak meaningfully of heat and wetness as coniuncta of certain bodies, where later (II 834-846) he will deny them as predicates of the primordia.

Σῶμα : Corpus

By Lucretius' definition, corpus is that which is capable of acting on something and being acted upon itself.

per se quodcumque erit, aut faciet quid
 aut aliis fungi debet agentibus ipsum
 aut erit ut possint in eo res esse gerique.
 (I 440-442)

Such a formulation is readily seen as a restatement of the earlier definition of body (corporea natura .I 433-436) as it describes the corpora caeca.

tamen omnia corporea constare necessest
 natura quoniam sensus impellere possunt.
 tangere enim et tangi, nisi corpus, nulla posset res.
 (I 302-304)

This same conception of body is developed in Epicurus' argument that the soul, since it 'acts' and 'suffers' to a degree greater than anything else, can not be immaterial (ἀσώματον). The only possible conception we can form of the immaterial taken in isolation (καθ'ἑαυτό) is that of the void which can neither act nor suffer:¹¹⁷

καθ'ἑαυτὸ δὲ οὐκ ἔστι νοῆσαι τὸ ἀσώματον πλὴν τοῦ κενοῦ·
 τὸ δὲ κενὸν οὔτε ποιῆσαι οὔτε παθεῖν δύναται,
 ἀλλὰ κίνησιν μόνον δι'ἑαυτοῦ τοῖς σώμασι παρέχεται.
 ὥσθ'οἱ λέγοντες ἀσώματον εἶναι τὴν ψυχὴν
 ματαιίζουσιν. οὐθὲν γὰρ ἂν ἐδύνατο ποιεῖν
 οὔτε πάσχειν, εἰ ἦν τοιαύτη· νῦν δ'ἑναργῶς
 ἀμφοτέρωτα ταῦτα διαλαμβάνομεν περὶ τὴν ψυχὴν
 τὰ συμπτώματα. (67.2-68)

Defined in opposition to body, ἀσώματον is the negation of body. So defined this is a fundamental and necessary distinction in both Epicurus and Lucretius. The void considered as an ἀναφήσ φύσις, is incapable of offering resistance or support, and is, therefore, seen as the condition for motion. Τὸ ἀσώματον by contrast, defined as that which can neither act nor be acted upon, neither touch nor be touched, is so formulated to preclude the possibility of a tertium quid which could be considered as immaterial, and neither body nor void, but capable of acting on body. Established early in the De Rerum Natura, this definition of body and void affords the grounds for Lucretius' treatment of the soul as necessarily corporeal (III 161-167, 94-135). Thus the context in which Epicurus defines the void as ἀσώματον sheds considerable light on the specific terms in which Lucretius considers body and void in setting out the

distinctions crucial to a full and coherent account not only of motion, but of the actions and passions of a material soul, responding to and influencing a material environment.

Kenon: Inane

By contrast to body for which we have the testimony of the senses,¹¹⁸ the void can be known only through reason (λογισμῶ = animi ratione), since it cannot, by definition, impinge on the senses. Accordingly, Epicurus defines it as an ἀναφῆς φύσις - as something which can neither touch nor be touched, act or be acted upon. Lucretius does not translate this term directly from its context in the Letter to Herodotus [3]. But the concept has already been set out in his demonstration that void exists in bodies (I 334). Space, or the void, is defined as intactile when it is introduced in contrast to body whose 'office' it is to 'oppose' and 'resist' (336-338).¹¹⁹ The adjective intactile occurs only once in the De Rerum Natura where it is used to define the void by contrast to body. Other than these, there can be no tertia natura:

sin intactile erit, nulla de parte quod ullam
rem prohibere queat per se transire meantem,
scilicet hoc id erit, vacuum quod inane vocamus.
(I 437-439)

Epicurus introduced the void as the condition of motion. As the existence of the void is arrived at solely through reason it is presented as the necessary conclusion of a condition contrary to fact:

Ἐἰ δὲ μὴ ἦν ὁ κενὸν καὶ χώραν καὶ ἀναφῆ φύσιν
ὀνομάζομεν. οὐκ ἂν εἶχε τὰ σώματα ὅπου ἦν οὐδὲ
δι' οὗ ἐκινεῖτο, καθάπερ φαίνεται κινούμενα.

In Lucretius' version, inane, which he has already introduced as the condition of motion (Initium primum ... movendi I 383) translates κενόν and

fills a lacuna in the text of the Letter to Herodotus (see Appendix). The equivalents for τόπος and χώρα can not be surely established, but it is most likely that χώρα = spatium and τόπος = locus. Both spatium and locus have already been used indifferently to describe the medium of bodies in motion (compare spatium dederint I 379 and I 389-390). In Epicurus space is regarded as place in which bodies are located and space through which they move. This dual conception is clearly reflected in Lucretius' translation:

nam corpora sunt et inane
haec in quo sita sunt (ὄπου ἦν) et qua (δι' οὗ) diversa
moventur (cf. esse and geri in I 442).

In as much as the void is regarded as intangible (ἀναφής) it is regarded as the condition for the movement of bodies. Lucretius' fuller description of it as

nulla de parte
quod ullam rem prohibere queat per se transire meantem

corresponds to the terms of Epicurus' definition of the void: κίνησιν μόνον δι' ἑαυτοῦ σώμασι παρέχεται (67.5-6). While the office of body is to 'oppose' and 'resist', that of the void is to afford room for movement: κίνησιν παρέχεται = locum praebere in 443.

Finally, when Lucretius has set out the distinction between the eventa and coniuncta of the two naturae per se, he gives touch as the inseparable property of body and intangibility as that of the void:

tactus corporibus cunctis, intactus inani (I 454).

Συμβεβηκότα Συμπτώματα

In Lucretius the distinction between the essential and inessential attributes of body and space is made clear in the following terms:

Nam quaeque cluent,¹²⁰ aut his coniuncta duabus
 rebus ea invenies aut horum eventa videbis.
coniunctum est id quod nusquam sine peritiali
 discidio potis se seiungi seque gregari.
 pondus uti saxi, calor ignis, liquor aquae,
 tactus corporibus cunctis, intactus inani.
 servitium contra paupertas, divitiaeque,
 libertas, bellum, concordia, cetera quorum
 adventu manet incolumnis natura abituque.
 haec soliti sumus, ut par est, eventa vocare.
 (I 449-454)

The meaning of the term coniunctum is defined as the impossibility of separating a property from a given body without what Lucretius calls a peritiale discidium. Thus fire is hot and ceases to be fire as it ceases to be hot. The Greek of Epicurus brings out the point that this discidium is in its strict sense conceptual. In denying that chance attributes (συμπτώματα) share the nature of the whole body or that of its permanent attributes, Epicurus defines τὰ αἰδίων παρακολουθοῦντας those attributes without which it is impossible to conceive of body: ὄν ἄνευ σώμα οὐ δυνατόν νοεῖσθαι (70.6) Lucretius' addition of intangibility (intactus) as inseparable from the void would also show that the coniuncta are inseparable attributes of certain things because they are inseparable from our conception of these things. They are in no sense 'parts' of them (69.2, cf. 275 Us.).

Eventa, by contrast, are 'accidental' because they do not alter the nature of a thing by their presence or absence. Haec soliti sumus, ut par est, eventa vocare - is, as has been noted earlier, Lucretius' manner of calling attention to the appropriateness of a technical term to what it describes. In

the case of συμπτώματα, Epicurus does the same.

In Lucretius' translation, however, the word develops a wider application from the examples he gives to illustrate his meaning. Developing the element of chance inherent in the word eventa (cf. συμπίπτει and accidit/accidentia), the unstable and contrary conditions of slavery and freedom, poverty and wealth, war and concord are all brought forward by Lucretius as examples of eventa. The consideration of time and the reflection on the past this entails brings out more clearly the merit of Lucretius' choice of a term to translate συμπτώματα. Indeed, all of history can be regarded properly (ut merito) as eventa corporis atque loci.

This general distinction, while it might not pass unchallenged, is clear in its essentials as it is developed in Lucretius. In the Letter to Herodotus, the term συμπτώματα is at least interpretable from Epicurus' exposition, although this difficult text is further disfigured by a lacuna.

The term συμβεβηκότα is, however, involved in some obscurity which seems, or seemed, to have been largely dispelled by the analyses of Natorp and Giussani in the last century.¹²¹ A. Traglia, however, has recently questioned these interpretations and has tried to show that Epicurus' use of the term is imprecise enough to describe both essential and nonessential attributes (De Lucretiano sermone 29-37). In point of fact it is impossible to accept this conclusion on Traglia's evidence, in as much as the lack of precision he attributes to Epicurus is due rather to his own failure to distinguish between Epicurus' use of expressions such as ὡ συμβαίνει and συμβαίνοντα which describe symptomata, and the special meaning of the perfect.¹²² In Epicurus it is apparent

that συμβαίνοντα is not the equivalent of συμβεβηκότα (71.1). This perfect participle, along with τὰ αἰδίων παρακολουθοῦντα Epicurus uses to describe what Lucretius translates *coniuncta* - those properties which are essential to our conception of a thing. Such are size, shape, and weight - attributes shared by both the atoms and visible bodies - and color which is an attribute of only *ta horata*.

Although Traglia's attempt to show that Epicurus did not use the term symbebekota with precision can not be regarded as successful, the evidence on which he bases his argument does point up the confusion inherent in Epicurus' choice of this term. Συμβεβηκός, deriving from συμβαίνειν, is in Greek generally the equivalent of σύμπτωμα which derives from the very similar συμπίπτειν. . One is forced to ask why Epicurus, who took pains to choose the term symptoma "according to common usage," chose the uncommon and potentially confusing symbebekota. This is a question to which Traglia has indicated an answer.

Συμβεβηκός is one of those terms of many meanings analyzed by Aristotle in *Metaphysics* Δ.¹²³ In its common meaning συμβεβηκός describes an attribute which is not necessarily or generally true of what it describes. However, it can denote an attribute which is always true of a thing, but not essential to it: καὶ ταῦτα μὲν ἐνδέχεται αἰδία εἶναι. It is this uncommon meaning of the term which we see in Epicurus where the adverbs αἰεὶ and αἰδίων attach to συμβεβηκότα and παρακολουθοῦντα. These however, are essentially and perpetually true of a thing.

The distinction, while it is possibly ambiguous in Greek is clear in Lucretius' coniunctum. The Greek term itself comes into a somewhat sharper

focus when it is seen as originating in the logical writings of Aristotle. The entire question of the relationship between Epicurus and Aristotle is obscure, but it would appear from a papyrus fragment that we have in the writings of Epicurus one of the first references to an esoteric work of Aristotle: the Analytics.¹²⁴ In this, at least, we have a link between the two thinkers which was not forged in the ardor of Epicurean polemic against 'il primo Aristotle'.

(III)

The Concept of the Atom

In the Letter to Herodotus the key term 'atom' appears first as it serves to contrast compounds and the indivisible units out of which these arise:

Καὶ μὴν καὶ τῶν σωμάτων τὰ μὲν ἐστὶ συγκρίσεις,
τὰ δ' ἐξ ὧν αἱ συγκρίσεις πεποιήνται·
ταῦτα δὲ ἐστὶ ἄτομα καὶ ἀμετάβλητα.

Compounds contain void, are divisible, and, consequently, are subject to change and destruction. The important distinction made here seems to have been made again in two books of the Περὶ Φύσεως and in the Μεγάλη Ἐπιτομή (Σ 39.6-7), and is one of the στοιχειώματα translated into the De Rerum Natura.

In Lucretius, the distinction is drawn in the following terms:

Corpora sunt porro partim primordia rerum,
partim concilio quae constant principiorum.
sed quae sunt rerum primordia, nulla potest vis
stringuere; nam solido vincunt ea corpore demum.
(I 483-486)

Sed and partim . . . partim reveal a sensitivity to the particles which formally mark the distinction in Greek. The term σύγκρισις is translated by concilium, and the description of the atoms as ἀμετάβλητα is more loosely

translated by sed quae sunt primordia rerum nulla potest vis stringuere. The complement of ἀμετάβλητα-ἄτομα would be the only term of this proposition which has no clear equivalent in Lucretius. Indeed, any account of Lucretius' technical vocabulary shows a remarkable gap in the complete absence of any single term translating the Greek ἄτομοι. Lucretius neither transliterates this term as he does for homoeomeria and harmonia nor calques it as did Cicero whose individua is closer to ἀδιαίρετά than it is to the verbal root of ἄτομα.¹²⁵

However, it would be a serious error to mistake the lack of any single term for the atoms in the De Rerum Natura for Lucretius' failure to translate the concept. It is evident from this passage and from what follows that although Lucretius does not fix on a single word to convey the indivisibility of the Epicurean principia, he does treat clearly and at length the necessity for units of matter which can not be physically sectioned.

Translating from the Greek of the Letter to Herodotus Lucretius turns the adjective ἄτομα by nam solido vincunt ea corpora demum. Solido corpore is the equivalent of στερεόν in Greek, but here it translates ἄτομα in as much as ἄτομα are logically, if not lexically, the equivalent of στερεόν.

nam neque collidi sine inane posse videtur
quicquam nec frangi nec findi in bina secando.
(I 532-533)

Clearly we have here not only the elements of the Epicurean concept of the atom, but the verbal root of the Greek term reproduced in Lucretius' findi in bina secando.

In the De Rerum Natura the impossibility of the infinite division of matter and the necessity for indivisible primordia is an argument couched in a

variety of terms which translate the language of Epicurus' discussion without matching it point for point. One of Lucretius' terms is the descriptive solido corpore (I 486, 500). This term serves not so much for the denial of the divisibility of the primordia which it entails, as for the denial of void within the primordia. This and sine inane agree with the doxographic description of the atoms as ἀμέτοχα κενού.¹²⁶

The concept of the atoms as the limits of physical sectioning is worked out in Lucretius' demonstration of what he calls a "limit to the breaking up of matter" (finem frangendis rebus). The verb frangere corresponds to the Greek term ἄθραυστα which appears in the doxography as a description of the Epicurean atom.¹²⁷ This and the phrase findi in bina secundo puts Lucretius' argument in close contact with the argument developed later in the Letter to Herodotus where Epicurus argues that the infinite division of matter as well as the infinite progression from magnitude to magnitude are inconceivable (55.8-59.10).¹²⁸

In Greek this discussion is not an abstract disquisition; it is the refutation of a rival theory which asserts that a limited body can contain an indeterminate or infinite number of particles. Epicurus' anonymous opponent is very possibly Anaxagoras (the τῆς of 57.1), and it is likely that Anaxagoras represents the view attacked by Lucretius in I 615-627 (cf. I 844).¹²⁹ Whoever the unnamed opponent was in fact, it is clear enough what view he maintained. Whoever inked in headings to some of the MSS of the De Rerum Natura identified the position Lucretius was attacking by introducing lines I 551 ff. with Contra εἰς ἄπειρον τὴν τομήν. There is then reason to speculate that

Epicurus developed his concept of the atom through a refutation of a position maintaining the possibility of an infinite analysis of matter; it seems to have been the ἄπειρον of Anaxagoras which gave definition to Lucretius' argument for the atom as a corporibus finem secandis (I 844).

By this logic the atom is conceived as the limit to the analysis of matter; but the Epicurean atom is not conceived of as existing without parts (ἀμερής). As such it represents Epicurus' refinement of the thought of Democritus and Leucippus under the pressure of Aristotle's critique of early atomism.¹³⁰ For Epicurus the atom could no longer be thought of as ἀμερής, for such a conception would exclude the possibility of motion and of any complexity of shape.¹³¹ Epicurus' argument for the ἄκρα - or the simple and least parts within the atom (τὰ ἐλάχιστα καὶ ἀμερῆ πέρατα) - is developed in the Letter to Herodotus in strict connection with the denial of an infinite division of matter. The De Rerum Natura shows the same connection, but a different ordering. Epicurus' argument against εἰς ἄπειρον τὴν τομήν yields the concept of the atom; the following argument against εἰς ἄπειρον τὴν μετάβασιν - a position illustrated by some of the paradoxes of Zeno - results in minimum and simple limits of the conceptual analysis of the atom into parts.

From the terms of the Letter to Herodotus it is clear that the infinite division of things threatens to "squander matter by frittering it away into nothing." But Epicurus does not give here any more than a hint of what compelled him to develop the conception of the atom as susceptible to analysis. This can be gotten in part from Lucretius' difficult presentation of

the minimae partes (I 599-634). Lucretius asserts the existence of these minima within the atom, but argues that Nature will not suffer the reduction of matter into these least parts, because of themselves they can show none of the behaviour of matter.

propterea quia, quae nullis sunt partibus aucta,
non possunt ea quae debet genitalis habere
materies, varios conexus pondera plagas
concursus motus, per quae res quaeque geruntur.

(I 631-634, cf. II 725-727. 1020)

This list of the properties of creative matter can be reduced to the three properties Epicurus attributed to the atoms: σχῆμα, βάρος, and μέγεθος. The varios conexus of matter arise from the implication of atoms of suitable shape and the world as we know it would be inconceivable without a great variety of atomic shapes, all of which are susceptible to the analysis of geometry.¹³² The minimae partes are invoked again in Lucretius' treatment of atomic shapes (II 485), and Epicurus treatment of atomic is recoverable in part from fragments of book XIV of the Περὶ Φύσεως.¹³³

The lines quoted immediately above conclude Lucretius' argument for the minimae partes. His presentation of this abstract matter comes without preparation and the familiar connectives (tum porro I 599, praeterea 615, denique 628) refer to a sequence of thought which is so compressed that it has been thought necessary to suppose a lacuna between 599 and 600. Although his characterization of the minimae partes is introduced by a causal connective, Lucretius is giving a description and not a reasoned demonstration.

sunt igitur solida primordia simplicitate
quae minimis stipata cohaerent partibus arte,¹³⁴
non ex illorum conventu conciliata,
sed magis aeterna pollentia simplicitate.

(I 609-614)

Aeterna pollentia simplicitate is the atomistic guarantee of the integrity of matter which Epicurus saw endangered by the endless process of squandering by attrition. What coincidences there are between the letter and the De Rerum Natura indicate that the qualification ἀμερῆ is translated by the phrases sine partibus (I 601) and nullis praedita partibus (I 625); ἐλάχισταις conveyed by minima natura and minimae partes, while the more technical ἀμετάβατα is left untranslated and unrepresented. The key term ἄκρον is translated here by extremum cacumen (cf. I 750) which gives a clearer visual conception than the term extremum which translates it elsewhere (I 961); extremum cacumen seems to have suggested to Giussani his example of the point of a needle.

In the short presentation of the minimae partes there are no examples and no demonstrations. Lucretius seems to be somewhat diffident of the matter at hand. He does not bring over the conception of the limits of transition from point to point. (μετάβασις) which suggests the torments of Zeno's paradoxes. While he shows a firm grasp of the argument against the infinite divisibility of matter, it is possible that the argument for the minimae partes was inaccessible to him and to his audience since the only approach to it was that of Greek geometry. It is precisely this terrain Lucretius chooses to skirt when he is confronted with Epicurus' involved account of atomic shapes (III 258-261).

(IV)

The Infinite Universe of Greek Atomism
(I 951-1117)

Simpler in its logic and clearer in its presentation is the demonstration which shows the universe infinite: the atoms in number and space in extent.

Lucretius' arguments for this proposition translate two of the stoicheiomata of the Letter to Herodotus ([6] and [7]).

While Epicurus' proof for an infinite universe (41.6-42.5) follows on his treatment of the atom, Lucretius exposition returns to this stage of an argument interrupted for a demonstration of the rightness of the solution of atomism over earlier theories for the primordia rerum. The Presocratic archai are left in ruins for an overview of a universe constructed in its bleak and fundamental simplicity: nil ... praeter spatium et primordia caeca (I 949-950 = 1110). Here Lucretius is conscious of a difficult pass in his argument. The dark matters (obscura) he speaks of in I 922 are the theoretical demonstrations for the infinity of the Epicurean universe. In arguing these, Lucretius has translated, and in part salvaged, Epicurus' master proposition: Τὸ πᾶν ἄπειρον. Τὸ πᾶν (omne quod est), in as much as it can be analyzed into its only independent components - atoms and void - can be termed ἄπειρον in two special senses. Epicurus saw this and felt the need to establish as corollaries the two interdependent propositions that both are infinite - the atoms in number (πλήθει) and space in extent (μεγέθει). Epicurus' demonstration of the master proposition takes the following form:

Ἄλλα μὴν καὶ τὸ πᾶν ἄπειρον ἐστὶ.
 τὸ γὰρ πεπερασμένον ἄκρον ἔχει.
 τὸ δὲ ἄκρον παρ' ἕτερόν τι θεωρεῖται.
 <Ἄλλα μὴν τὸ πᾶν οὐ παρ' ἕτερόν τι θεωρεῖται.>
 ὥστε οὐκ ἔχον ἄκρον πέρασ οὐκ ἔχει.
 πέρασ οὐκ ἔχον ἄπειρον ἂν εἴη καὶ οὐ πεπερασμένον.

The bracketed lines represent the Greek of Epicurus' most distinguished editor, and correspond to the additional and essential step supplied by the De Rerum

Natura.

Omne quod est igitur nulla regione viarum
 finitumst; namque quod finitumst extremum debebat habere.
 extremum porro nullius posse videtur
 esse, nisi ultra sit quod finiat; ut videatur
 quo non longius haec sensus natura sequatur.
nunc extra summan quoniam nil esse fatendum
 non habet extremum, caret ergo fine modoque.
 (I 958-964)

The logical connective supplied in 963, taken with the clear evidence of Cicero's version of this proof in the De Divinatione, represents the original for Usener's reconstruction of Epicurus' Greek.

In the version of the De Natura Rerum, Lucretius has reproduced the mode of analysis of his original. Precisely as Epicurus scrutinizes the term ἀσώματος later in the Letter to Herodotus, the proposition τὸ πᾶν ἄπειρον is gained through considering the term in its first and immediate sense (τὸ πρῶτον ἐννόημα , 38.1). The ἄπειρον is that which has no πέρασ . It is noticeable that Lucretius, who calques the term by the substantive infinitem (I 977, 1025, 1038), introduces the concept not in terms of the impossibility of arriving at an upward limit to number, but in terms of the impossibility of conceiving any limit set to extension in space. Thus he first translates Epicurus' ἄπειρον by nulla regione viarum finitum (= infinitum, I 977). And, although he has introduced the problem of the infinite in terms of both number and extension, (I 951-956), his proof differs from that of his original in that it is conceived in terms of space alone. In Epicurus there are clear indications of a concern for extending the term ἄπειρον both matter and space.¹³⁵

The elements for the demonstration of the ἄπειρον were not new with Epicurus. To have a πέρασ ἀπείραιοις necessary, and this πέραινον is

ἕτερόν τι . These are abstract considerations, but Lucretius does not translate them by the abstract sequence reproduced by Cicero. Lucretius translates this Epicurean stoicheioma in both the language given above and in an exemplum (I 968-983) which embodies the abstractions of logic in a vigorously imagined challenge to discover a limit to the universe: he challenges his reader to conceive of a limit which could stop a flying javelin. Like many of the exempla of the De Rerum Natura, this seems original with the Latin poet and an example itself of his doctus ardor. Nonetheless, it is tempting to suggest that while the example of the volatile telum (I 970) is Lucretian, the germ of the idea might well be Greek, going back (most probably through Epicurus) to a demonstration associated with the name of Archytas. As Simplicius represents it, Archytas demonstrates the inconceivability of fixing a limit to space not by means of a javelin imagined spinning through space with nothing to halt its course, but with a humble staff.¹³⁶

Lucretius and the tradition he was propounding to Rome found it impossible, to borrow Newton's language, "to imagine any limit to space without at the same time understanding (Intellegendo) that there is space beyond it."¹³⁷ In the De Rerum Natura this understanding is rendered visible to the imagination.

CHAPTER V

The Stoicheiomata (Book II)

(I)

The Aperion and the Theory of Motion

As translation is now understood, the De Rerum Natura is a translation of neither the Περὶ Φύσεως nor the Μεγάλη Ἐπιτομή. Occasionally, it translates the Greek of the Letter to Herodotus, but fundamentally it can not be a question of judging Lucretius' poem as a replica of lost or fragmentary Greek texts. The De Rerum Natura stands as a translation of a philosophy; when Lucretius speaks of translation himself, he speaks of the "dark discoveries of the Greeks" (I 136) and "this nature and explanation of things" (V 335).

This natura and rerum ratio is, as it is most evident from the Letter to Herodotus, an architecture of fundamental and interlocking propositions interpreting the physical world and making possible a life free from disturbance and disquiet. In endeavoring to confront the De Rerum Natura with the scant texts which seem to inform its argument, it is a matter of prudence to ask why Epicurus articulated his master propositions (stoicheiomata) as he did: how are they fashioned to carry the weight of argument they support as the physical world is revealed in its invisible processes?

It is essential to ask these same questions of Lucretius. In some cases, we already have an answer. In his formulation of the argument nullam rem e nilo gigni divinitus umquam he has been seen as highly sensitive to the

ethical consequences of such a proposition. Again, his special terms for concepts such as corpus and inane show him a master of the architecture of the philosophy he is expounding in Latin. Indeed, there is very little in the De Rerum Natura which is not prepared for in its first two books which can be fairly described as πάντων κρηπίς καὶ θεμέλιος.¹³⁸

Book II contains the last of the master propositions which can be isolated by matching Lucretius' Latin with the Greek of the Letter to Herodotus. Each of these abstracts in its most austere form Lucretius' argument for atomic motion, atomic shapes, properties, and the sensible qualities they produce by their concerted and continuous motion. None of the stoicheiomata introduced in Book II appear without preparation. The kinds of movement defined in the first of these [8] hold as much for small scale compounds and the particles they reject as they do for the greater systems of matter (congressus materiali) such as the world [6,1]. These motions and their products have been rendered theoretically possible through the special arguments for the apeiron established in Book I [6].

If the universe is considered finite either in the number of atoms it contains or in its extension in space, the world as we know it and are a part of it could never have come about. In the first case motion remains possible, but the system is sterile in that finite atoms could not meet in infinite space; contrariwise, motion becomes impossible on the supposition of infinite matter in limited space; indeed, infinite matter cannot exist in finite space.

Lucretius introduces his description of the movements of single

bodies and compounds by returning his argument to the fundamental truths already gained in his demonstration of the ápeiron.

et quo iactari magis omnia materialia
 corpora pervideas, reminiscere totius inum
 nil esse in summa, neque habere ubi corpora prima
 consistant, quoniam spatium sine fine modoquest,
 immensumque patere in cunctas undique partis
 pluribus ostendi et certa ratione probatumst.

(II 89-94)

Of his four (or possibly five)¹³⁹ proofs for the unbounded extension of space, he singles out the one which is most intimately bound up with the possibility of motion.¹⁴⁰ In his edition of Epicurus, Bailey recalls this third proof as a "slight variation" of one of the twin arguments Epicurus produces for the ápeiron as this concept includes both atoms and void (Epicurus 184). Unlike Epicurus initial proof which was syllogistic [5], the arguments here are managed by contraposition. It is the second of these which states that were space bounded and bodies infinite in number, bodies could have no room in which to stand. The difficulty with Bailey's comparison is that Lucretius did not couch his argument in these terms or in terms like them.

Bailey's confusion is due in part to his failure to appreciate that Lucretius has raised two separate problems in his treatment of the ápeiron (I 951-957), and that he has taken them up in reverse order:¹⁴¹ the problem of the ápeiron is raised in terms first of number and then extension, and argued first in terms of extension (I 958-1007) and then in terms of number (I 1008-1020, 1021-1051). In view of this paratactic exposition there are considerable difficulties in identifying Lucretius' copia materialia (I 986), which has not yet been shown as infinite, with Epicurus' ἄπειρα σώματα. What Lucretius means

to demonstrate is that if space were indeed bounded all matter (not infinite matter) would necessarily have already sunk to the lowest point of the universe and settled there in inert confusion. Epicurus' argument is that in a bounded space infinite matter could not have so much as a station: εἰ τε τὸ κενὸν ἦν ὠρισμένον, οὐκ ἂν εἶχε τὰ ἄπειρα σώματα ὅπου ἐνέστη [6,2]. (Cf. 60).

There are, I believe, reasons for agreeing with Diels and with Bailey himself in assuming that Epicurus' second special argument was once represented in the De Rerum Natura, but that it has been lost in transmission. The only trace of it is the lacuna Marullus detected between 1013 and 1014. If such is the case, it must have preceded Lucretius' second special argument (Epicurus' first). Epicurus' Greek supplies the protasis concluded in I 1014-1020.

εἰ τε γὰρ ἦν τὸ κενὸν ἄπειρον, τὰ σώματα ὠρισμένα

nec mare nec tellus neque caeli lucida templa
nec mortale genus nec divum corpora sancta
exiguum possent horai sistere tempus,
nam dispulsa suo de coetu material
copia ferretur magnum per inane soluta,
sive adeo potius numquam concreta creasset
ullam rem, quoniam cogi disiecta nequisset.

That the last two lines have ultimately the authority of Epicurus is shown - if, indeed, it needs showing - by the very similar turn in the argument Diogenes had cut in stone for the benefit of Oenoanda. Freed in infinite space - finite bodies could never come together; they are ἀσυνέλευστοι (cf. cogi disiecta nequisset), and bodies in isolation are sterile ὥστ' οὐκ ἂν ἦν οὐδ' ὁδ' ὁ κόσμος .¹⁴² Epicurus speaks of finite bodies, Diogenes of our

world, and Lucretius of the sea, earth, the bright regions of the heavens, humankind, and the sacred bodies of the gods.

By this stage of the argument for the ápeiron, the conditions for cosmogony have been introduced by the Epicurean tactic of contraposition. By this kind of argument omnis negatio est affirmatio. To assert what cannot happen, the Epicurean affirms what can and does happen, and in affirming those conditions necessary to produce and sustain the physical world, Lucretius is lead to anticipate the arguments he will develop in Books II (II 1105-1174) and V (V 416-508). But before the cosmos can be brought to birth and shown perishable a theory of motion is needed to reveal the laws of the movements which sustain and loosen all compounds - large and small. As Simplicius knew, for the atomists there is no generation or destruction without motion.¹⁴³

(II)

Motion: Downward and Deflected

We have, then, already in Book I a proof for the incessant movement of the atoms¹⁴⁴ [7]. For the viable compounds of the physical world as we know it there must be an inexhaustible source of matter streaming in from infinite space (ex infinito I 997, cf. ad Hdt. 45.4-8, ad Pyth. 89). In the ápeiron there can be no lowest point, no middle, nor any station for matter (I 992-994, cf. ad Hdt. 60. These considerations introduce the next stoicheioma translated into the De Rerum Natura [8].

Space, the inane, is the condition for motion; infinite space is the

condition for ceaseless motion; continuous motion within compounds is the condition of all sensation but touch.¹⁴⁵ The stoicheiomata begin to fit into place.

Three propositions are brought out in Epicurus' Greek: (1) the atoms are in constant motion; (2) on colliding, some rebound; (3) others are locked in place in a kind of vibratory movement (παλμός). Epicurus further distinguished two kinds of compounds in which atoms vibrate: either the individual atoms are 'locked' into a compound, or they are imprisoned within the interlocking complex of atoms.

- αἱ δὲ αὐτοῦ τὸν παλμὸν ἴσχυσαι,
 (1) ὅταν τύχῃσι τῇ περιπλοκῇ κεκλειμέναι
 (2) ἢ στεγαζόμεναι παρὰ τῶν πλεκτικῶν.

These distinctions are represented in the De Rerum Natura as follows:

partim intervallis magnis confulta resultant,
 pars etiam brevibus spatiis vexantur ab ictu.
 et quaecumque magis condense conciliatu
 exiguis intervallis convecta resultant,
 indupedita suis perplexis ipsa figuris.

For Epicurus' two kinds of atomic motion, Lucretius has three:

(1) recoil (ἀποπαλμός), (2) loose vibration (παλμός = vexantur ab ictu),¹⁴⁶
 and (3) close vibration in a tightly interlocking compound. Here, Lucretius has blurred the sharp distinctions of his original. He seems to be unaware of what these seemingly over-nice distinctions prepare for. The atoms which are sheltered by interlocking bodies (στεγαζόμεναι παρὰ τῶν πλεκτικῶν) are the atoms of the soul which are enclosed within the body as water within a vase. Outside of this protective enclosure, they would dissipate; within it, sensation is possible since it is this outer shell which by its motion transmits motion

to and creates sensation in the soul - κατὰ τὴν ὁμούρουσιν καὶ συμπαθ-
εῖαν .¹⁴⁷ This stoicheioma is a good ashlar block elegantly cut and clearly
numbered by Epicurus; in the Letter to Herodotus the verb στεγάζεσθαι occurs
again only in the context of Epicurus' psychology where it describes the soul
and its protective casing (64.2 cf. 65.3, 66.3).

Here Lucretius is at fault as a translator and as an architect. But
he can, I believe, be shown to have perfectly grasped the application of
Epicurus' first species of motion: that of recoil. That he did is not apparent
at first. Intervallis magnis confluta resultant seems to convey the force of the
verb διίστάμενα; but poorly. (In Greek, the atoms 'stand apart' in their
collisions; in Latin they 'leap apart'.) Bailey interprets confluta as "dashed
together" which (like Latham's "after a collision") seems perhaps more
Lucretian than Lucretius. If this is its meaning, confluta serves as merely a
double for convecta (II 101); but generally editors have found the word dis-
tasteful and a few have emended.

If confluta is the word Lucretius wrote, he used it only here in his
poem. Such unique or unusual terms in Lucretius are sometimes MSS corrup-
tions; but when they occur in a strictly philosophical context they often repro-
duce a technical term in Greek.¹⁴⁸ Given the context introducing Lucretius'
treatment of atomic motion, it is a fair guess that the term (or concept) repre-
sented by the past participle confluta is ὑπέρεισις .¹⁴⁹ If this is so, it
would seem that in translating his original Lucretius has indicated the applica-
tion of Epicurus' distinct formulation. Atomic motion is conditioned by the size
and shapes of the atoms as they come together in space. In the case of the

first kind of collision with its rebound Lucretius indicates as much:

cetera, quae porro magnum per inane vagantur,
 paucula dissiliunt longe longeque recursant
 in magnis intervallis; haec aera rarum
 sufficunt nobis et splendida lumina solis.

(105-108)

The example of aer and the motion natural to it (what Robert Boyle called its 'spring') is significant as a preparation both for Lucretius' treatment of the constitution of the soul (animus/anima) and for his cosmogony and celestial mechanics. It is precisely in this later context that Epicurus makes use of the special term ὑπέρεισις to describe the motions which 'cushion' the earth in the center of this cosmos. The term has its application to Epicurean psychology as well.¹⁵⁰

In the human soul aer produces peace; in the larger cosmos it produces a kind of equipoise and rest (ἰσότης, μωνή) for the earth which is cushioned by it.¹⁵¹ Perhaps the best indication of this connection is that when Lucretius comes to explain the equipoise of the earth he chooses as his model the manner in which the exceedingly subtle soul sustains and supports the body in innate union with it (V 550-563). Here I would interpret the verb sustineat (V557) as the active counterpart of confulta. (Cf. sustentata V 96).

(III)

The Exiguum Clinamen

The kind of motion treated by Lucretius in this proposition is that of impact and rebound. When he has established the nature of this kind of motion he moves forward to demonstrate a natural downward motion (deorsum cuncta

ferantur, (II 184-215) and a 'slight swerve' (exiguum clinamen) away from the perpendicular (II 216-293).

This is a curious development and one for which we have no explicit authority in the Greek of Epicurus. Quite clearly the so-called clinamen is introduced here to explain the existence of compounds and to provide for the ethical consequences of our experience of willing and willing not. The exiguum clinamen swings enormous consequences. ¹⁵²

Giussani argued that the absence of such a proposition in the Letter to Herodotus stands as one of the most indicative symptoms of "il più bel disordine che immaginare si possa" (Studi Lucreziani, 3, 4-5).

Bignone, however, has since offered the quite plausible argument that the absence of the proposition of the clinamen in the Letter to Herodotus indicates not a defect in the MSS of Diogenes Laertius, but rather a stage in Epicurus' thought which he was enabled to go beyond when he came to Athens in 306. ¹⁵³

There is good evidence in Philodemus, Plutarch, and Cicero that Epicurus' proof for the clinamen was anchored in the human experience of desiring, willing, and in the palpable fact of compounds. Such is the proof in Lucretius. ¹⁵⁴

With no extensive Greek texts with which to compare Lucretius' Latin, only a few observations can and need be made.

(1) Whereas Aëtius (I 12 5, I 23 5) reports one species of motion for Democritus and two for Epicurus, Lucretius clearly defines three causes of motion:

in seminibus quoque idem fateare necessest,
 esse aliam praeter plagas et pondera causam
 motibus

(II 284-286)

It would be overly rigid to say that this is out of line with the categories of the Doxography and of Diogenes of Oenoanda. Lucretius thought here is perfectly clear: all bodies move downwards because of their weight (pondus); the formation of compounds in the world as we know it is explained on the hypothesis of the swerve, but our experience of willing and desiring (voluntas/voluptas) guarantees us that we are not slaves to predictable reactions provoked by this swerve. The spontaneous swervings of random atoms is necessary to emancipate man from the Ἀνάγκη created by pondus and plagae. Epicurean atoms must swerve to escape the Democritean mechanism created by earlier swervings. According to Aetius again Democritus defined necessity as τὴν ἀντιτυπίαν καὶ φορὰν καὶ πληγὴν τῆς ὅλης (DK 68 A 66).

(2) The pairing of παρέγκλισις with clinamen should serve only to identify the concept involved; it is utterly inadequate as a translation. The common notation of παρέγκλισις/clinamen reflects a habit of mind which restricts philosophical thought to nouns. In Lucretius there is in fact no such concept as that of the clinamen. He speaks of an exiguum clinamen principiorum (II 292) and argues that bodies must veer slightly (depellere paulum II 219, paulum inclinare II 243). Paulum and exiguum represent no trifle; they match perfectly the essential qualification of ἐπ' ἐλάχιστον attested in Cicero, Philodemus, and Plutarch. Keeping to the economy of hypothesis desired by Philodemus, to show that atomic swerves do not contradict our experience the argument need suppose only the 'slightest' swerve. To suppose more would be

inelegant.

(3) The entire weight of this concept is not, then, carried by the term clinamen alone. For Lucretius' translation the verb declinare is considerably more significant. (Declinare occurs only 4 times in the De Rerum Natura; it is distributed in II 221-259). The Greek παρέγκλισις suggests only a variation from the plumb-line within the atoms. Lucretius' declinare suggests both this and the freedom from the mechanical chain of blows which it makes possible:

declinamus item nec tempore certo
nec regione loci certa, sed ubi ipsa tulit mens.
(II 259-260)

(IV)

Lucretius' finita figurarum ratio

Epicurus' statement of the important theoretical doctrine defining the variety of atomic shapes is, like all of the stoicheiomata of the Letter to Herodotus, no more than a reminder of conclusions already reached and a notation of how to reach them. Writing for the student advanced in his physics, he is in a position to give his reasons; for an understanding of these reasons the reader will need to know well in advance the distinctly Epicurean analysis of the atoms into 'least parts' (58.1-59.10).

It is our great fortune therefore, that Lucretius can take nothing for granted, but takes care to show his reader just where he stands in the development of the argument of the De Rerum Natura. In the Letter to Herodotus Epicurus' habit is to introduce the 'parts' (μέρη) of his physics by the familiar

καὶ μὴν καί where Lucretius will cement his argument by quod quoniam docui. It is by this bond that Lucretius refers back to the doctrine of the minimae partes to show that the atoms can not exist in an infinity of shapes (II 477-499, cf. 43.3-4, 55.8).

Epicurus articulates his thought in two critical terms - both of which are predicated of the atoms in a rather narrow sense. In terms of the variety of their shapes, the atoms are called ἀπερίληπτα, while they must be thought of as ἄπειροι in terms of the number of like atoms within each shape. The first term is deduced from the variety of our experience (cf. II 342-380), the second anticipates the doctrine of the 'least parts'.

The difficult term is ἀπερίληπτα. If the interpretation usually given it is correct, Lucretius would seem to have missed the subtleties of Epicurus' thought. By Bailey's interpretation (which is that of Zeller and Diels),¹⁵⁵ Epicurus asserts that atoms exist in "an incomprehensible number of varieties of shape."

There is no trace of this notion in Lucretius' entire exposition of the ratio figurarum; rather he argues that atomic shapes are finite, but the number of like atoms for each shape is infinite. Thus finita and infinita articulate Lucretius' thought and, depending on how one interprets ἀπερίληπτα, reflect or obscure the precision of his original. Clearly, whatever sense the word has in Epicurus, this is best interpreted in context. The Greek of the letter reads: ἀπερίληπτά ἐστι ταῖς διαφοραῖς τῶν σχημάτων. οὐ γὰρ δυνατόν γενέσθαι τὰς τοσαύτας διαφορὰς ἐκ τῶν αὐτῶν σχημάτων περιειλημμένων.

The precise meaning of aperilepta seems to lie in part in the vague "same delimited shapes." Although Bailey's interpretation of ἀπερίληπτα is quite possible on a number of parallels, it seems that here at any rate the term denies what is implied in "the same delimited shapes."¹⁵⁶ This much can be gotten from the context of the Letter to Herodotus by itself. Even this is enough to suggest that in offering a finita figurarum ratio, Lucretius was offering the thought of Epicurus. That he did becomes apparent once this thought is returned to its place in the history of atomism. It has already been seen that Epicurus separates himself from the thought of earlier atomism by maintaining that the atoms are not without parts (amere) - which is to say that they have extension can be analyzed by geometry. This novel position entails the rejection of the theory that the atoms are infinite in the number of their shapes,¹⁵⁷ and it is here that Epicurus is brought to the theory of an indefinite number of atomic shapes. On one extreme one faces the infinite shapes of earlier atomism, on the other the limited regular solids of Plato's Timaeus.

Book XIV of the Epicurus' Physics shows that the "same delimited shapes" are the solid figures of the Timaeus.¹⁵⁸ Fairly extensive fragments of this book reveal a nameless polemic against those who ascribe a fixed shape to fire, earth, water and air. Those who do so Epicurus calls "more ridiculous" than the other physicists who leave the elements undefined, but agree that there are particular shapes for each of the elements.¹⁵⁹ A like argument can be detected in Lucretius' insistence that atomic shapes can not be all of a kind. Just as he has concluded in Book I that the variety of the world (varantia rerum) can not be reduced to a single beginning (I 635-689), he concludes here that

such a variety is impossible on the hypothesis of a single atomic shape:

quare etiam atque etiam simili ratione necessest,
 natura quoniam constant neque facta manu sint,
 unius ad certam formam primordia rerum
 dissimili inter se quaedam volitare figura.

(II 377-380)

These are similar to the terms by which he introduces his argument for atomic shapes: non vulgo paria omnibus omni constant (II 336-694). What is intriguing about this passage is that in denying that atomic shapes are artificial, Lucretius is, in effect, denying the likely story of the Timaeus (32B). According to a notice in [Plutarch] (DG 286.4-10), Epicurus denies for the atoms such artificial forms as hook, trident, and ring, in as much as they are "easily breakable."

So interpreted, Lucretius' finita figurarum ratio (II 480) translates the conception underlying the term ἀπερίληπτα. As Epicurus saw his situation, any theory on the variety of atomic shapes had to reject the intolerable consequences of an infinite number of atomic shapes, while avoiding the arbitrary identification of a fixed number of solid figures. The middle course is to argue that since the atoms can neither be infinite in the variety of their shapes, nor narrowly delimited, they must be indefinite.¹⁶⁰

These considerations help explain Epicurus' reserve in a matter which seems to have interested him considerably.¹⁶¹ Plato's fault in this matter is his complete failure to prove his atomism and his lack of interest in the argument from analogy.¹⁶² By contrast, there is very little indication of how detailed an analysis of the geometry of atomic solids Epicurus offered. Lucretius' despair of rendering the technical language for the composition of the soul seems to

point to the language of Greek geometry (III 316-322, cf. IV 648-654), and it appears that he had difficulty with terms such as hamatus.¹⁶³ However, in the stoicheioma which Lucretius translates into the De Rerum Natura, Epicurus speaks of the atoms which are the exemplars of each shape as similar, not identical. In this Lucretius is as careful as Epicurus. Throughout his entire discussion of atomic shape it is never a question of the same forms, but of like forms.

(V)

The Epicurean Axiom of Change

The last of the propositions translated into the De Rerum Natura stands in a kind of isolation; it is the sole proposition which lies beyond what Epicurus marks off as necessary for a general understanding of his Physics (45.1-2), and in Lucretius' rendering it is not immediately recognizable as a translation of Epicurus' Greek. There is yet another reason why this proposition stands apart from those that precede it; it illustrates more clearly than any other how Lucretius' treatment of the stoicheiomata represents at the same time both a translation and an application.

Of all the propositions translated into the De Rerum Natura this last draws most heavily on the theory preceding it ([1], [2], [4]), and penetrates deepest into the argument of the poem.

The Greek given in [9] has been recognized as informing in some way Lucretius' arguments that color can not be attributed to the primordia. By substituting color for the ποιοτήτης of his original Lucretius translates Epicurus'

reasoning but applies it to the problem of color - the most fluid of all qualities. Epicurus' ποιότης γὰρ πᾶσα μεταβάλλει is rendered explicit and concrete in omnis enim color mutatur in omnis. The calque qualitas was not a Latin word nor a useful word. Plato felt the need to apologize for its equivalent when he introduced it into Greek (Theaetetus 182A) and Balbus in the De Natura Deorum fastens the Latin neologism both to color and to its Greek original.¹⁶⁴ (Pease notes here the difficulty of philosophizing in a language lacking in such essential abstractions as quality. It was a difficulty which Lucretius was keenly aware of, although his poem shows that it is possible to treat Epicurean Physics without the word atomoi or individua, and qualities without the word qualitas.)

The argument for the "apathy" of the world of atoms is not new in Book II, but rather applies arguments developed in Book I to the problems of relating quanta to the fluidity of qualitative changes. Although the arguments of Book I (I 635-920) precede the treatment of qualitative change in Book II, and although they are prior in the logic of the exposition of both Epicurus and Lucretius, it appears that their language and logic is best understood in terms of Book II (II 730-833).¹⁶⁵

The extent of the correspondence between the Greek of the Letter to Herodotus 54-55.7 and the Latin of the De Rerum Natura requires a more elaborate display than that given above in [9].

The most extensive Latin exposition of the Epicurean conception of change is Lucretius' argument stripping the atoms of their variable qualities. It has its counterpart in the Letter to Herodotus where Epicurus sums up his exposition of sensation by denying its attributes to the quanta which produce

it. Epicurus sought the basis of qualitative change in the mechanism of three quantitative processes within compounds. Within aggregates the shifting,¹⁶⁶ increase or loss¹⁶⁷ of atoms of various shapes and various movements creates a kind of change which can not be attributed to the atoms themselves. Lucretius illustrates one facet of this phenomenon by the brilliant paradigm of letters (elementa) which produce by their permutations (positura) fire from wood:

non alia longe ratione atque arida ligna
 explicat in flammis et <in> ignis omnis versat.
 (II 881-882, cf. I 684-689, 901-920)

This is a part of the mechanism of qualitative change. Beneath the rich surface of sound and meaning lie the 21 letters of the Latin alphabet. But of themselves these elements constitute a neutral world devoid of sense, color, sound, heat, and the other qualities which flow on the surface of things.

Epicurus' arguments against contaminating the ultimate and fixed units of matter with these qualities articulates the theory underlying Lucretius' treatment of the problem of qualitative change and its source in the varied but invariable quanta of Epicurean physics. They inform Lucretius' polemical review of the theories of matter connected with the names of Heraclitus, Empedocles and Anaxagoras in Book I; in part they are translated into the argument of Book II where color, taste, sound, smell and sense are stripped from the primordia [9]; and they fit into the long series of proofs of the mortality of the soul in Book III. Throughout the first three books of the De Rerum Natura, Epicurus' arguments are brought out step by step as they are applied to the special problems arising from Lucretius' exposition.

In Book I of the De Rerum Natura Lucretius tests the Epicurean theory of matter against earlier theories associated with the names of Heraclitus, Empedocles, and Anaxagoras. These same philosophers figure in the same order of exposition in the fragmentary "preliminary refutations" of Diogenes of Oenoanda; in Lucretius, however, the polemic against the Presocratics appears to be unique in Epicurean literature in as much as it does not introduce the Epicurean solution as the inevitable escape from the impasse of earlier theories.¹⁶⁸

As in Diogenes, Heraclitus is the first to enter the fray: Heraclitus init ... dux proelia primus (I 638). Lucretius' first point of attack is the difficulties involved in reducing the variety of the world (variantia rerum) to fire alone, and supposing at the same time that this same simple substance is capable of transforming itself into multiplicity by the mechanism of condensation and rarefaction (I 645-689). Here there appears some noticeable coincidence between Lucretius' language and that of the Letter to Herodotus.¹⁶⁹

More impressive is the correspondence emerging from the second argument (I 665-679).

Quod si forte alia credunt ratione potesse
ignis in coetu stringui mutareque corpus,
scilicet ex nulla facere id si parte reparcent
occidet ad nilum nimirum funditus ardor
omnis et <e> nilo fient quaeque creantur.

nam quodcumque suis mutatum finibus exit
continuo hoc mors est illius quod fuit ante.
proinde aliquid superare necesse est incolumne ollis
ne tibi res redeant ad nilum funditus omnes
de niloque renata vigescat copis rerum.

nunc igitur quoniam certissima corpora quaedam
sunt quae conservant naturam semper eandem,
quorum abitu aut aditu mutatoque ordine mutant
naturam res et convertunt corpora sese,
scire licet non esse haec ignea corpora rerum.

(I 665-679)

If it is going to last, the matter out of which our experience arises
can not transform itself into this variety and share its variable and perishable
nature. By this axiom of change any transformationalist theory must be judged
impossible. Epicurus furnishes the reasoning for this: (54.5-11)

δεῖ τι ὑπομένειν ... στερεὸν καὶ ἀδιάλυτον, ὃ τὰς
μεταβολὰς οὐκ εἰς τὸ μὴ ὄν ποιήσεται οὐδ' ἐκ τοῦ
μὴ ὄντος, ἀλλὰ κατὰ μεταθέσεις ἐν πολλοῖς,
τινῶν δὲ καὶ προσόδους καὶ ἀφόδους. ὅθεν ἀναγκαῖον
τὰ [μὴ] μετατιθέμενα ἀφθάρτα εἶναι καὶ τὴν τοῦ
μεταβάλλοντος φύσιν οὐκ ἔχοντα, ὄγκους δὲ καὶ
σχηματισμοὺς ἰδίους· ταῦτα γὰρ καὶ ἀναγκαῖον ὑπομένειν.

This fundamental argument is equally effective when it is turned
against the school of thought associated with the name of Empedocles. These
are the transformationalists who see the traditional elements (Lucretius' maxima
mundi membra) altering themselves one into another: fire into air, air into
water, water into earth, and back up the ladder of transformations.

nec cessare haec inter se mutare, meare
a caelo ad terram, de terra ad sidera mundi.
quod facere haud ullo debent primordia pacto.
immutabile enim quiddam superare necessest
ne res ad nilum redigantur funditus omnes.
nam quodcumque suis mutatum finibus exit,
continuo hoc mors est illius quod fuit ante.
quapropter quoniam quae paulo diximus ante
in commutatum veniunt, constare necessest
ex aliis ea, quae nequeant convertier usquam,
ne tibi res redeant ad nilum funditus omnes.

(I 787-797)

Such an argument is easily extended to the homoeomeria of Anaxagoras, for it proves as absurd to speculate that fire exists in wood as to imagine that there are hilarious atoms. By the axiom of change the sensuous qualities of the physical world can not have their origin in qualities reduced to a miniscule scale; they can arise only from a fixed variety of invariable quantities - Lucretius' elementa (I 907-914).

Denique iam quaecumque in rebus cernis apertis
si fieri non posse putas, quin materialia
corpora consimili natura praedita fingas,
hac ratione tibi pereunt primordia rerum:
fiet uti risu tremulo concussa cachinnet
et lacrimis salsis umectent ora genasque.
(I 915-920)

Once again the inevitability of the atomistic solution is stressed as the fundamental errors of earlier physics are exposed in terms of theoretical demands only atomism can satisfy. Atoms can neither burn nor break out in laughter. They can not share in the changes suffered by the qualities they create:

ὄθεν ἀναγκαῖον τὰ [μὴ] μετατιθέμενα ἄφθαρτα εἶναι
καὶ τὴν τοῦ μεταβάλλοντος φύσιν οὐκ ἔχοντα.

The necessary corollary to this is that whatever suffers alteration within itself is itself perishable.¹⁷⁰

(2)

The principle involved is in no wise different when Lucretius returns to the problem of color and calor in Book II. (Significantly it is with Book II that Lucretius' exposition falls out of step with the ordering of the stoicheiomata in the Letter to Herodotus; what this means for the presentation of qualitative

change in the De Rerum Natura is that Lucretius presents its quantitative mechanics within the context of a theory of motion.) Here Lucretius' axiom of change (nam quodque suis mutatum finibus exit, continuo hoc mors est illud quod fuit ante) is applied to the problem of color and its production from atomic quanta.

Munro was, I believe, the first of Lucretius' editors to note that the principle involved in the first appearance of this axiom resembles the Letter to Herodotus 54. But it does not seem adequate to leave the matter there, since Epicurus' Greek represents the formulation of a principle which is developed in Book I of the De Rerum Natura, but which seems to derive ultimately from the problem of qualitative change. The principle is seen in its most extensive development in Lucretius in his equivalent treatment of qualitative change [9]. Although his language reflects that of the Letter to Herodotus (54-55.7), the relation between the Greek and its Latin application would seem to have been obscured by Lucretius' rendering of ποιοτήσ by color/nitor.

In Book II the arguments developed in Book I are repeated in substance ([9] and II 753-756). For what remains in the Letter to Herodotus which is yet unrepresented in the De Rerum Natura there emerges now a correspondence noted by editors of Epicurus (55.1-7, cf. 826-833). Epicurus argues that all attributes of matter are (with the exception of shape, weight, and mass) surface phenomena and can not characterize the atoms themselves. To show this he argues that in our experience the peeling (περιαίρεσις)¹⁷¹ of matter from body destroys the qualities which lie on its surface, but some shape must re-

main intact. Relying on the analogy of this experience, or experiment, we are obliged to suppose that the atoms can not have qualities, but must have some determinate shape. Lucretius' adaptation of this reasoning allows Epicurus to speak out clearly and vividly in Latin as he rarely did in Greek:

Quin etiam quanto in partes res quaeque minutas
 distrahitur magis, hoc magis est ut cernere possis
 evanescere paulatim stringique colorem.
 ut fit ubi in parvas partis discerpitur austrum:
 purpura poeniceusque color clarissimu' multo,
 filatim cum distractum est, disperditur omnis;
 noscere ut hinc possis prius omnem efflare colorem
 particulas quam discedant ad semina rerum.
 (II 826-833)

(3)

The last application of the axiom of change (marked out for the fourth and last time by Lucretius' mors formula) is to be seen in Book III where it is shown that since the soul changes, - in this case, is affected by medicine - it must be perishable.

Addere enim partes aut ordine traiecere aequumst
 aut aliquid prorsum de summa detrahere hilum,
 commutare animum quicumque adoritur et infit
 aut aliam quamvis naturam flectere quaerit.
 at neque transferri sibi partis nec tribui vult
 immortale quod est quicquam neque defluere hilum.
 nam quodcumque suis mutatum finibus exit,
 continuo hoc mors est illius quod fuit ante.
 (513-520)

(4)

nam quodcumque suis mutatum finibus exit,
continuo hoc mors est illius quod fuit ante.

In the context of the death of a material soul, Lucretius' peculiar formulation has a certain specious appropriateness. But the metaphor of mors implies too much, since the soul which is healed by medicine does not die, but changes from one state into another, and in so doing shows that it is subject to death and dissolution (mortalia signa mittit). By the metaphor of mors, health is death of illness. The paradoxical potential of Lucretius' language here makes

one think of Heraclitus.

Thus Pasquale interpreted the axiom as it first appears in the De Rerum Natura as the language of Heraclitus twisted against him by Lucretius. This, of course, involves the unwarranted assumption that such a formula must originate in the matrix of its first appearance.¹⁷² However, the matrix of the axiom as it appears in the first three books of the De Rerum Natura is the Letter to Herodotus 54-55.7.

Therefore, it is likely that if Lucretius' axiom of change is to be understood in the terms of a Greek original, it is in the Letter to Herodotus that an equivalence is to be found. The Lucretian metaphors of fines and mors seem to originate, not in the dark expressions of Heraclitus, but in the sober prose of Epicurus.

To show this, it is necessary to translate Lucretius' Latin back into Greek. (1) Fines: quodcumque suis mutatum finibus exit has proved a difficult expression.¹⁷³ But from its context in Book I (I 670-671) and Book II (II 753-754) it is at least clear that a thing "leaves its boundaries" when it suffers increase or loss or the shifting of its parts (μετάθεσις). Notoriously, an atom can not change in this manner since it can not increase or decrease or be split into moveable parts. Thus when the axiom of change appears in the De Rerum Natura for the first time, Lucretius insists that the atoms can not leave the boundaries of their shapes: certissima corpora quaedam sunt quae conservant naturam semper eandem (I 676-677). The atoms constitute a finem fragendis rebus (I 551-552) because their solidity guarantees them an inviolable fixity of shape (I 666, II 828).

Lucretius' meaning by fines can not, then, be as vague as it is in his commentators. The atoms are bounded by their shapes which are fixed (certissima); in their variety and in the variety of their combinations they produce the variety of the sensible world, but they guarantee, in their solidity,

the permanence of matter. This is precisely the emphasis in Epicurus who attributes to them only ὄγκους καὶ σχηματισμοὺς ἰδίους - their individual shapes and masses. Since they can not change their shape μετασχηματίζεσθαι . (55.1-7) they must constitute the units which are combined and dissolved in the changes which take place above them.

(2) Mors can be reduced to its prose original by reference to the Letter to Herodotus, or, indeed, to the language of Greek physics. The relation between the Greek of Epicurus and the language of Lucretius' axiom of change is not a matter of imitation, and, very possibly, not a matter of Epicurean authority. For anyone who is not born a Greek and a philosopher the language of Greek philosophy is rich in metaphors which are neither dead nor moribund, but quite new and alive. They are brought to life once they have been removed from the medium of Greek.

Thus Epicurus speaks of the units which are transposed within compounds as ἄφθαρτα (54.9); to suppose otherwise would bring matter to its death (φθειρέσθαι 55.7); in change qualities perish from the body as a whole (ἀπολλύμενα 55.4). Lucretius' reaction to these terms is the reaction of the English speaking reader who hesitates in translating between "imperishable" and "indestructible," "perish" and "be destroyed," and "perish" and "are lost," "disappear."

A nice example of this process is to be found in the following: Plutarch gives the Epicurean view of compounds in terms which probably derive from Colotes.¹⁷⁴ Where the Greek reads

τὰ δὲ συγκρίματα πάντα ῥευστὰ καὶ μετάβλητα καὶ
γιγνώμενα καὶ ἀπολλύμενα,

Lucretius' Latin reads

Neve putes aeterna penes residere potesse
corpora prima, quid in summis fluitare videmus
rebus et interdum nasci subitoque periri.

(II 1010-1013, cf. 1002-1003)

CHAPTER VI

The Character of Lucretius' Translation

(I)

In attempting to render Epicurus' stoicheiomata into Latin, Lucretius was faced with one of the most difficult texts in the Greek language. The studies of the preceding two chapters give some indication of how much doctrine is compressed into the Letter to Herodotus. If one turns elsewhere in Epicurus' surviving writings for a fuller version of these doctrines, the contrast between Epicurus' shorthand and his more leisurely style of writing is startling. Where the epitome is obscure because of its great compression, the language of Epicurus' On Nature is difficult because of its diffusion. Given considerable and continuous papyrus fragments from a single book, it is very often difficult to determine Epicurus' precise subject. The treatment of the problem of free will in one of the books of the On Nature (Epicuro [31]) Arrighetti calls "truly a text for the initiate" (570). It would be irreverent, but perhaps not irrelevant, to suggest De Rerum Natura IV 180-183 as a commentary on Epicurus' leisurely style.

In introducing Lucretius' translation of Greek philosophy, the De Rerum Natura was set within the history of Epicurean literature in Latin. In conclusion it might be revealing to present the problems of Lucretius' translation from a modern point of view, and to contrast his statement of the difficulties he faced as a translator with the judgments of modern editors who are faced in the one case with the Letter to Herodotus, in the other with the whole

of Epicurus' surviving writings.

1

Lucretius

Nec me animi fallit Graiorum obscura reperta
difficile inlustrare Latinis versibus esse,
multa novis verbis praesertim cum sit agendum
propter egestatem linguae et rerum novitatem.
(I 136-139)

2

Cyril Bailey (Epicurus 173)

The first letter, addressed to Herodotus, is an exposition of the main principles of Epicurus' system, intended, as he explains at once, not for the outside world or for novices, but for those who have already made some progress in acquiring the master's ideas. It accordingly assumes considerable knowledge on the part of the reader, especially of the many technical terms and phrases used by him, and is often allusive and compendious. It is, moreover, carelessly written, and abounds in long sentences, which give the appearance of never having been thought out as a whole, but merely built up in the course of composition, as new thoughts occurred to the writer. It has no doubt suffered also in transmission, and consequently, as we have it, is one of the most difficult and obscure pieces of writing in the Greek language.

3

Graziano Arrighetti (Epicuro XXV)

La traduzione che è stata messa a fronte del testo non ha alcuna pretesa letteraria; in caso contrario sarebbe stato tradito in maniera grossolana lo spirito di Epicuro; essa ha un duplice scopo: offrire una guida nella lettura di testi né facili né sempre immediatamente perspicui, e, per informarlo di come l'editore ha inteso il testo che pubblicava. Non è detto però che questi scopi, sia pur modesti, sia agevole raggiungerli; il modo di esprimersi di Epicuro presuppone continuamente un'infinita di altri dati dottrinali, ogni sua parola o espressione tecnica (e di tecnicismi son piene le prime due epistole e il περί Φύσεως), vale a dire la parte di gran lunga maggiore di

quanto abbiamo di lui) si rifa a concetti e nozioni che nel linguaggio scientifico della scuola avevano un loro preciso e stabilito valore, e ogni volta che venivano adoperati richiamavano tutto un sistema già definitivamente organizzato e articolato ben presente a chi scriveva e a chi leggeva: orbene, tutto ciò direi che è impossibile a rendersi in altra lingua, almeno di non creare in essa un vocabolario tecnico corrispondente a quello epicureo; ma allora tanto vale impadronirsi di quello originale. Per questo non esiterei a affermare anche che per Epicuro il genere di traduzione che possa chiarire anche se non tutti, almeno una buona parte dei problemi creati dal linguaggio tecnico e rendere il testo immediatamente perspicuo è impossibile: solo delle ampie e numerose note possono assolvere questo compito.

(II)

Utilitas expressit nomina rerum (V 1029)

Arrighetti has given a good account of the problems Epicurus' Greek (or want of it) imposes on the modern translator. To translate Epicurus it is necessary to create a vocabulary corresponding to Epicurus' Greek. But what this process of creation should be requires some reflection. It would seem that the task of Epicurus' modern interpreter is much less arduous than was that of Lucretius, since modern physics goes back in good part to the revival of corpuscular philosophy in the XVII-century. Lucretius, for his part, could rely on no native, or naturalized, Roman tradition: Epicurus felt the theoretical need to demonstrate that there can exist no visible atom; Lucretius felt the need to demonstrate the existence of invisible bodies; Epicurus needed to distinguish between qualities - symbebekota and symptomata; Lucretius had no word for quality, which he renders concrete by color. The real difficulty for Epicurus' modern translator is to resist the attraction of translating Epicurus' physics into modern physics. Concepts such as that of the atom, gravity, the vacuum,

air pressure, the distinction between primary and secondary qualities all seem accessible, but they are so by a very deceptive assimilation.

In translating from Greek into Latin, the problem of the interpreter was not one of creating and imposing new abstracts verbum e verbo. Greek had developed concepts which by the time of Aristotle and Epicurus had already a long history, but were almost without a history in Latin. Cicero's familiar formula - nobis verba parienda sunt imponendaque nova novis rebus nomina (Fin. III 3) - is only a partial statement of the problem. Notities, exemplum, and specimen are terms which better express the essential difficulty. New terms can express little outside of a context revealing the novel concepts they signify (cf. I 830).¹⁷⁵ Thus the great importance of the Lucretian simile which returns the conceptions of Greek physics back to their models in experience.

Lucretius' manner in introducing such concepts is to stamp his terminology as technical and to create for them an environment of meaning defined by synonymous or nearly synonymous expressions.¹⁷⁶ and illustrated by exempla and similes. Familiar terms he invests with new meaning. Meaning can not burst from new terms by themselves (cf. V 1055), since language is not a matter of thesis:¹⁷⁷

Cogere item pluris unus victosque domare
non poterat, rerum ut perdiscere nomina vellent.
(V 1050-1051)

Compilations of abstract nouns are not repositories for the facts of Lucretius' translation. The approach proper to the De Rerum Natura as a translation is first to isolate Lucretius' original (where this survives) and then to attempt to understand his translation both in terms of its immediate context and

in terms of what it prepares for. In its matrix in Lucretius' poem, a new argument is expressed by nouns, by adjectives, verbs, and adverbs; it is expressed by simile, metaphor, examples, and by the very sound and structure of his verse.¹⁷⁸

namque alid ex alio clarescet ...
ita res accendunt lumina rebus.

(I 1115, 1117)

"In so far as he was able, he made use of Latin words":¹⁷⁹ this concouision to Traglia's study of Lucretius' philosophical terminology is surely justified. Some few Greek words he admits into his philosophical argument;¹⁸⁰ there is a small number of new and rare words translating the technical terms of the Greek, and some of these are not fully intelligible apart from Greek (cf. *confulta* II 98); but the key terms of Lucretius' argument are from 'common and vulgar Latin' - to use an expression of Cicero (*Fin.* III 3). In the *De Rerum Natura*, Latin becomes philosophical.

The term *simulacra* (*eidola*, Catius' *spectra*) offers itself as a good example of how Lucretius invests common words with new meaning. The argument of Books III and IV is introduced in the ethical premises of Lucretius' proem: philosophy is necessary to explain such disquieting things as apparitions and the phenomena of the heavens. Lucretius has chosen his terms with great prudence. *Simulacra* is one of many words describing ghostly apparitions such as that of Ennius' dream (I 112-126). The terms *simulacra* (I 122) and *species* (I 125) become philosophical as they are explained in terms of the Epicurean theory of motion (II 105-113) and vision (IV 26ff, 732-747). *Simulacra* are not only the shades of the dead; they become the films which are the

medium of vision. These are themselves a species of effluences, and apparitions are no more than a species of simulacra. Simulacra in the primitive sense of this word are explained as atomic films which are extremely mobile (II 105-113) and, like the rapidly forming phantoms of clouds, they arise from no solid body (steremnion), but are fragile facades of spontaneous formation.¹⁸¹

Thus the term simulacra becomes philosophical as vision and visions are explained in terms of Epicurean physiology. Catius' spectra is too narrow a term; in Lucretius, simulacra first signifies an apparition, but it suggests any "likeness." It is a term which is carefully prepared for, both ethically and philosophically.

A great part of Lucretius' success as a translator is to have compelled his reader to see common things uncommonly. The Ennian teaching on the soul, which introduces the need for the argument of Book III, comprises only the anima and its umbra.¹⁸² In the 'second syllabus' of Lucretius' proem, which directly contradicts this scheme, the problem is posed in terms of both the anima and the animus (I 131) anticipating a solution in Epicurus' doctrine of the corporeal διμερῆς ψυχῆ.¹⁸³ From the outset the soul is considered in a very special manner. Joined in innate union within the composite and corporeal soul, the anima and animus become tractable to the ethical premises of the poem.

Such an observation is equally valid for what has often been taken as periphrasis and pleonasm in the De Rerum Natura. The effect of phrases such as materies humoris (IV 270) and corpus aquae naturaue tenuis aeris (II 232) is to disassociate the facts of our most common experience from our common way of experiencing them.¹⁸⁴

(III)

The Letter to Herodotus is the main source for our knowledge of Epicurus' natural philosophy in Greek; its language is the source of the main theoretical propositions established in the first two books of the De Rerum Natura. These Euclidean postulates have an application beyond their immediate context, since they represent the ribbing for a comprehensive interpretation of the physical world and its processes (Books III-VI). They are fashioned to support the subsequent arguments for the nature of the soul, sensation, and the interpretation of phenomena such as the 'rest' of the earth, the magnet, and plagues. The precise terms of their formulation are of crucial importance in as much as they reveal their application. Their terms of each of the stoicheiomata are defined by rival and ethically disquieting explanations of what they are designed to explain.

The studies devoted to Lucretius' treatment of Epicurus' stoicheiomata (Chapters IV-V) show a master's grasp of how these propositions fit into the architecture of Epicurean physics. Terms are fashioned to bear the weight of argument in the last four books. With perhaps two exceptions,¹⁸⁵ Lucretius' translations evidence a prudence and preparation which argue against the fashionable view that the matter of the De Rerum Natura unrolls with a Greek papyrus. There is, indeed, every evidence of a servitude to the Greek, but this, to adopt the fine term by which MacKenna introduces his translation of Plotinus, is a 'pre-servitude' which makes possible a great degree of freedom. There is some evidence that Lucretius knew Epicurus' Greek by memory¹⁸⁶ - something which should come as no surprise given the terms of Epicurean in-

struction. Lucretius' regard for the whole is shown by the fact that his philosophical language develops, but does not shift or vacillate with the introduction of new matter.

(IV)

Quantum enim Graeci praeceptis valent,
tantum Romani, quod est maius, exemplis.

(Quintilian, XII 2 30)

Last, it remains to recall that Lucretius was in large part translating from Greek prose (Epicurus, Thucydides) into Latin verse. It is the contrast between Epicurus' sober reasoning and the "ardent passion of learned Lucretius" which exercises a universal fascination over readers who know both. With Euripides, Homer, and especially Empedocles, there is no such contrast.¹⁸⁷

It comes as something of a shock to discover that some of Lucretius' most brilliant poetry has its source in the drab prose of Epicurus and the very language of Greek philosophy. It seems more natural to believe that Lucretius owed the armature of his poem to Epicurus, but that his similes are the windows of his own peculiar genius. In a sense they are, for it is a good part of this genius to be able to discover in Greek both philosophy and poetry inseparably bound together.

In the foregoing studies, Lucretius' language has repeatedly prompted the observation that a metaphor dead or moribund in Greek has been revived by translation into Latin. The metaphors of any language are faintest for those who use them most often. Just so, the language of modern physics is alive with metaphors - fields, currents, waves - which are now largely dormant. Such

metaphors are of utmost interest because, in the development of the concepts for which they are notations, they served as models for how things behave.¹⁸⁸

Such models are especially revealing for atomism since the ultimate realities of this philosophy lie further from man's ken than do those of other philosophies.¹⁸⁹ For Democritus, truth lies in an abyss, and Lucretius' apocalypse reveals "nothing but empty space and 'blind' first beginnings"

(I 1110):

moenia mundi
discedunt, totum video per inane geri res.
(III 16-17)

The enormous variety of the sensuous world as it is vividly created in Lucretius' poem is reducible to atoms of different sizes and shapes, moving through space at various speeds, in various trajectories. The abyss between the two worlds is spanned by the similes and examples which return the reader to models in experience that perhaps Epicurus himself was unaware of. The Lucretian simile is not the poetic counterpart of Epicurean analogy; it is Epicurean analogy.

The master paradigm for the hidden processes of the atoms interacting within the void is that of Lucretius' verse where the twenty-one letters of the Latin alphabet create a microcosm of meaning, sound, and sense.¹⁹⁰ Common letters can transform themselves by their elementary permutations from wood into fire (I 912). Sixteen letters alone can by their arrangement (taxis) create Empedocles' four 'roots' - caelum mare terras . . . solem - and trees, fruits and living things (I 1015-1016): verum positura discrepitant res.

This paradigm is brilliant. The sensuous world and the great variety

of its forms are created from a grammar of elements by the mechanism of arrangement. This paradigm, indeed, persuades of too much, since Lucretius has contaminated these 'elements' with sound (cf. I 919-920, II 845), and cannot because of his written line illustrate the mechanism of thesis. He can illustrate the possibilities of AN (schema), and AN NA (taxis), but not that of thesis: N and Z (cf. Aristotle, Metaphysics A4 985b4):

tantum elementa queunt permutato ordine solo.
at rerum quae sunt primordia, plura adhibere
possunt unde queant variae res quaeque creare.
(I 826-828)

Diels has been seen to argue that since Epicurus uses the term stoicheia for the 'elements' of rival theories but not for the elements of his own, Lucretius must have found the elementa paradigm in another and later source. The shapes and arrangements of the letters (grammata) of the Greek alphabet were already exploited by early atomism as a λόγος μίξεως. Thus "the same letters make up both tragedy and comedy" (DK 67A9). Balbus' critique of this paradigm indicates that it was familiar to Lucretius' near contemporaries (N.D. II 93). But even if it proves impossible to determine any direct source for this paradigm in Lucretius, it remains possible to name as a source the language of Greek physics. Diels himself suggests something like this, without fully realizing its implications: "Lucretius made use of this old notion, which had been transmitted to him by his teachers, not only as one of his terms, as they did, but he also brought out the full immediacy of its original image" (Elementum 14). It is just as possible that Lucretius needed no other source for this paradigm than that of the metaphor stoicheia.

Two examples should show how Lucretius restores many of the metaphors of Greek philosophy to their original immediacy.

Epicurus defines the soul as a "body of fine composition, which is scattered (δισεπαρμένον) throughout the whole compound (body) and most resembles breath with some mixture of warmth; in one part it more resembles breath, in another warmth" (63.3-5). Language which is similar to this definition Lucretius translates: cetera pars animae per totum dissita corpus paret et ad numen mentis momenque movetur (III 143-144).¹⁹¹ Dissita reproduces the faint metaphor of Epicurus' Greek. The seeds of soul are scattered throughout the entire organism. In Lucretius the faint model of these seeds becomes vivid as an example. In contrast to the atoms of honey, those of the soul are fine, round, and smooth:

namque papaveris aura potest suspensa levisque
 cogere ut ab summo tibi diffluat altus acervus:
 at contra lapidum coniectum spicarumque
 noenu potest, igitur parvissima corpora proquam
 et levissima sunt, ita mobilitate fruuntur.
 (III 196-200, cf. II 451-453)

In the cosmogony of Book V of the De Rerum Natura, Lucretius seems to draw away from the language of Epicurus and to approach that of Empedocles' poem. One of Lucretius' most vivid similes illustrates a phase of this process. The escape of aether from the earth which has begun to settle together marks the initial phase of the separation of the primordial mixture into systems of like things (pares . . . cum paribus V 437). Two of Lucretius' verbs - exhalant and fumare - reveal the model compressed into the description of this in Greek.¹⁹²

In Lucretius the approach of Empedocles' Neikos is represented as a

storm which threatens to violently scatter the confusion of primordial chaos (V 435-448). Aether is the first of the elements to separate:

per rara foramina terrae
 partibus erumpens primus se sustulit aether
 ignifer et multos secum levis abstulit ignis,
 non alia longe ratione ac saepe videmus,
 aurea cum primum gemmantis rore per herbas
 matutina rubent radiati lumina solis
exhalantque lacus nebulam pluviique perennes,
 ipsaque ut interdum tellus fumare videtur;
 omnia quae sursum cum conciliantur in alto,
 corpore concreto subtexunt nubila caelum.
 sic igitur tum se levis ac diffusilis aether
 corpore concreto circumdatus undique <flexit>
 et late diffusus in omnis undique partis
 omnia sic avido complexu cetera saepsit.
 (V 457-470)

There is a great beauty to this simile. Its origin goes back to the specialized language of Greek cosmology; and some of its terms are a version of Empedocles;¹⁹³ but its utility is that it returns the account of the birth of the cosmos back to a model in the common experience of the lifting of morning mist.

APPENDIX

The Evidence of Translation for the Text of Epicurus and Lucretius

The isolation of passages in the De Rerum Natura which translate the Greek of the Letter to Herodotus offers the possibility of an improved text of Lucretius and Epicurus; Epicurus secures doubtful readings in Lucretius, and Lucretius - faithful to his word - follows the steps of his master. Where it is a question of Epicurus' stoicheiomata, gaps in the Latin version are restored from its Greek original, and this original in turn can be completed from Lucretius' translation. Four of the nine propositions offer such evidence.

(I)

Lucretius-Epicurus

[3]

Ἄλλα μὴν καὶ τὸ πᾶν ἐστὶ <σώματα καὶ κενόν>

Nam corpora sunt et inane (I 420)

<σώματα καὶ κενόν> was restored by Gassendi on the strength of Lucretius' Latin and the corroborating evidence of Plutarch and Cicero (Opera Omnia V 70); so von der Mühl, Arrighetti, and H. S. Long; cf. Woltjer, Lucretii philosophia cum fontibus comparata, 18, and R. Westman, Plutarch gegen Kolotes, 135-136. Usener (frs. 74-76) and Bailey (Epicurus, Atomists 298 note 4) restore τόπος. Arndt (Emendationes Epicureae 26-27) accepts and defends the reading of the MSS. Strangely, Bailey offers as evidence for τόπος Sextus, adv. Dogm. III 333 (75 Us., fr. 13 Bailey) and Lucretius I 420, omitting Plutarch adv. Col. 13 1114a (74 Us.). Gassendi's κενόν is obvious from Epicurus' argument first for σώματα, then for κενόν (40).

(II)

Lucretius-Epicurus

[5]

<ἀλλὰ μὴν τὸ πᾶν οὐ παρ' ἑτερόν τι θεωρεῖται>

nunc extra summam quoniam nil esse fatendum (I 963, cf. 1001)

The argument for the substance of Usener's restoration has already been advanced in part (pp. 79-80). The evidence Usener adduces corroborates that of Lucretius' Latin (praef. xviii, fr. 297) and his Greek is far superior to that of Woltjer: <παρὰ δὲ τὸ πᾶν οὐθὲν ἔστι παρ' ὃ θεωρούμενον τὸ ἄκρον αὐτοῦ φανείη> (Lucretii philosophia cum fontibus comparata 32, note I). Cf. Arndt (Emendationes Epicureae) 27-29. Lucretius' omne quidem vero nil est quod finiat extra (I 1001) and Cicero's at quod omne est, id non cernitur ex alio extrinsecus (Div. II 103) suggests a Greek original which is in its substance and phrasing not far from Usener's restoration. Compare Philodemus, πΣ XXIV 31-32, and Alexander, Quaest. III 12 p. 200 20 Sp. (p. 212.12-14 Us.): εἰ μὲν οὖν τῷ πεπερασμένῳ τὸ εἶναι πεπερασμένῳ ἔστι ἐν τῷ θεωρεῖσθαι παρ' ἄλλο ... and Lucretius I 998-1001.

(III)

Epicurus-Lucretius

[6]

The lacuna detected by Marullus between lines 1013 and 1014 is filled in part at least by the Greek of Epicurus (see pp. 98-99); compare DO VI. Epicurus' τε, .. τε indicates the interdependence of the twin propositions as does Lucretius' aut etiam alterutrum simplice natura pateat tamen immoderatum (I 1012), cf. Sextus, MIX 333). This would seem to prepare for Epicurus'

special proofs for the apeiron.

If Lucretius has argued this second proposition at all, it could only fit into the lacuna falling between 1013/1014; necessarily it would have preceded Epicurus' second argument and would thus represent a fifth argument in the De Rerum Natura for the infinite extension of space. Since, contrary to the interpretation of some of Lucretius' editors, I 984-997 does not represent a variation of Epicurus' second special argument for the apeiron, this argument was either left unrepresented in the De Rerum Natura, or, as there is reason to suppose, fits in between 1013/1014. In this connection Petrus Candidus' marginal note to the 1512 edition of the De Rerum Natura (Flor. 32) is worth quoting: credit Marullus deesse hic aliqua carmina, quae continerent transitum ab infinitate inanis ad infinitatem corporum; in his enim nec mare nec tellus' ... procul dubio agit de infinitate corporum cum supra (953) de utroque infinito se dicturum promiserit (quoted by Munro I 73). Since what is lacking from the end term of this transition has been restored by Lucretius' original, it seems that this transition had as its initial term Lucretius' version of:

εἴ τε τὸ κενὸν ἦν ὠρισμένον, οὐκ ἂν εἶχε
τὰ ἄπειρα σώματα ὅπου ἐνέστη.

(IV)

omnis enim color omnino mutatur in omnis,
quod facere haud ullo debent primordia pacto.

(II 731-732)

ποιότης γὰρ πᾶσα μεταβάλλει·
αἱ δὲ ἄτομοι οὐδὲν μεταβάλλουσιν.

731 in F C Ω ; et O Q V; in omnia Marullus.

The reading of et makes necessary a lacuna between 749/750. This is the reading adopted by Giussani, Brieger, and Bailey, but it is obvious that there is no such lacuna in Epicurus' Greek which represents Lucretius' original here. Quod facere haud ullo debent primordia pacto refers back to mutatur precisely as in I 790-792.

G. Müller's rejection (Die Darstellung der Kinetik bei Lukrez 53-56) of II 748-756 from its context is a curiosity of Lucretian textual criticism. If these lines (especially II 751) are impossible in their sense and ill assorted to their context, it would seem that this same harsh verdict applies to the Letter to Herodotus 54-55.7 (cf. P. Boyancé, Gnomon 32 (1960) 627).

FOOTNOTES

Introduction (pages iii-vi)

- ¹ φασί : for the question of Cicero's originality see below, note 125.
- ² Of Plutarch's list, inane (kenon) and visus (phantasia) are Lucretian. Compare those terms listed below, p. 21.
- ³ For which, see R. Poncelet, Cicéron, Traducteur de Platon (Paris 1957).
- ⁴ I have not been able to obtain Peter's study, and know it only as a 36 page abstract noted in Marouzeau.

Chapter I (pages 1-22)

- ¹ Of the Roman Epicureans, L. Torquatus, the Epicurean spokesman of the De Finibus, was very likely a poet of sorts (Fin. I 25-26), and in Greek the refined poetry of Philodemus was well known: "poema porro facit ita festivum, ita concinnum, ita elegans, nihil ut fieri possit argutius" is Cicero's characterization (in Pisonem 70).
- ² The general reaction is summarized by Bailey, Lucretius III 1371. A list of the earlier Epicureans who wrote in Latin and whom editors imagine slighted by Lucretius' primus cum primis is given by Robin, Lucrèce III 45-46.
- ³ L. Edelstein states precisely the nature of this exaggeration in his 'Primum Graius Homo', TAPA 71 (1940) 78-90.
- ⁴ J. S. Reid in the Introduction to his Academica (21, note 1) questions the interpretation usually given these lines. Editors of Lucretius show almost complete agreement in their treatment of primus cum primis but do not come to terms with qui possim.
- ⁵ Post Amafinium autem multi eiusdem aemuli rationis multa cum scripsissent, Italiam totam occupaverunt (Tusc. IV 6-7); cf. Fin. II 44: populus cum illis facti; and in contrast, Lucretius, I 945, Epicurus (Us. fr. 187), and Seneca, Ep. 29 10.

- ⁶ As indicated by the passages cited above (note 5) and Fin. I 25: quaeritur saepe cur tam multi sint Epicurei; cf. Fin. II 81.
- ⁷ In Fin. I 26 Triarius remarks: Tu quidem totum Epicurum paene e philosophorum choro sustulisti. In Tusc. IV 6 Epicureanism is characterized as cognitu perfacilis; cf. Acad. I 6-7 and in Pisonem 72.
- ⁸ Fin. I 27: Quid enim me prohiberet Epicureum esse, si probarem quae ille diceret, cum praesertim illa perdiscere ludus esset? By contrast, Stoicism is difficult to master (Fin. IV 1).
- ⁹ Fin. I 25: sed multitudinem haec maxime allicit, quod ita putant dici ab illo, recta et honesta quae sint, ea facere per se laetitiam, id est voluptatem; cf. Tusc. IV 6, N.D. I 113, and in Pisonem 68.
- ¹⁰ The entire school is characterized in Fin. I 8 as being accountable for the Roman apathy towards Latin philosophical writings: Sed ex eo credo quibusdam usu venire ut abhorreant a Latinis, quod inciderint in inculta quaedam et horrida, de malis Graecis Latine scripta deterius.
- ¹¹ "When Cicero began to write, Latin may be said to have been destitute of a philosophical literature. Philosophy was a sealed study to those who were not thoroughly familiar with Greek." Reid, Academica, 20; cf. Traglia, De Sermone Lucretiano, 3-11.
- ¹² ad fam. XV 19 2. This is Cassius' opinion, but it is in complete agreement with Cicero's views on the school as a whole.
- ¹³ Robin in his note to V 336 suggests this with some hesitation, but Rabirius' association with Amafinius in Acad. I 6 is damning evidence that he was an Epicurean.
- ¹⁴ Tusc. II 7: Est enim quoddam genus eorum qui se philosophos appellari volunt, quorum dicuntur esse Latini sane multi libri; quos non contemo equidem, quippe quos numquam legerim; sed quia profitentur ipsi illi qui eos scribunt se neque distincte neque distribute neque eleganter neque ornate scribere, lectionem sine ulla delectatione neglego.
- ¹⁵ ad fam. XV 16 1 and XV 19 1 (Cassius' reply).

- ¹⁶ Reid notes that Catus was not the same man as the Epicure and friend of Horace (Academica 21, note 4) citing Cicero's letter to Cassius mentioning him as dead. But as Heinze suggests, the Catus of the Satires can be both as an idealized type (Horaz, Satiren 267). E. Fraenkel's general observations on the people of Satire I 3 would seem to apply here: "the men at whom Horace jibes in passing, are not, like those whom Lucilius multa cum libertate notabat, eminent figures of his own day; they are, at any rate most of them, mere ghosts, either dead or insignificant persons," Horace 88-89.
- ¹⁷ scripsit quattuor libros de rerum natura et de summo bono; quoted in Kiessling-Heinze, Horaz, Satiren 267.
- ¹⁸ References are given in the prosopographical article by Münzer, RE IIa 1, cols. 256-257.
- ¹⁹ For which, see A. E. Raubitschek, 'Phaidros and his Roman Pupils', Hesperia 18 (1949) 96-103.
- ²⁰ The connection between the note in Servius and the Epicurean account of human progress was argued by Münzer, Rh. Mus. 69 (1912) 625-629.
- ²¹ JRS 31 (1941) 52.
- ²² It is estimated that Philodemus' writings make up two-thirds of the holdings of the Villa dei Papiri, (D. Comparetti and G. de Petra, La Villa ercolanese dei Pisoni 1-8). For his relation to L. Calpurnius Piso, see H. Bloch, AJA 44 (1940) 490-493, and Nisbet's In Pisonem 183-188.
- ²³ Brutus 247: C. Memmius L. f. perfectus litteris, sed Graecis, fastidiosus sane Latinarum.
- ²⁴ Acad. I 4: ita ea nolui scribere, quae nec indocti intellegere possent nec docti legere curarent; cf. Fin. I 1, and Tusc. II 7.
- ²⁵ Div. II 5: Magnificum illud etiam Romanisque hominibus gloriosum, ut Graecis de philosophia litteris non egeant.
- ²⁶ Cf. Fin. I 10. On this and like passages Reid (De Finibus 15, note 3) ventures to suggest that "Cicero's words in speaking of the wealth of Latin often looks like an answer to the wail of Lucretius about the patrii sermonis esestas"; cf Fin. III 5, N.D. I 18, Tusc. II 35, III 10. These and further examples are

collected in M. A. Trouard's dissertation, Cicero's Attitude Towards the Greeks (Chicago 1942) 52-59.

- 27 Contra Eutychem III 55: neque enim verborum inops Graecia est ut Marcus Tullius alludit. This must be in answer to Cicero's unpleasant: O verborum inops interdum. quibus abundare te semper putas, Graecia!, Tusc. II 35.
- 28 This is Diels' comment on Cicero's translation of the $\delta\mu\iota\omicron\mu\epsilon\rho\eta$ the doxography attributes to Anaxagoras (Lucullus 118): ex graeco haec versa esse et solito quidem durius neminem fugit, scilicet Romanum qua gloriatur verborum abundantia deficit impeditum nimia vetustae philosophiae ignorantia. inde graeca vacillans et anxius ut caecus sequitur et non numquam fit ut graecis conlatis velut face nimia sermonis obscuritas ac compressio clarescat, DG 119-120.
- 29 Büchner, anxious to reconstruct the Entstehungsgeschichte of the poem, is one of the few critics to question the meaning of obscura in I 136. In it he detects a slightly derogatory tone and points to III 1-2 to show that a change of attitude has come about, 'Beobachtungen über Vers und Gedankengang bei Lukrez' (Hermes Einzelschriften I 1936) 111-113. K. Barwick, Hermes 58 (1923) 152, note 2, interprets both occultae res and obscura reperta as "den dunklen schwerverständlichen Stoff," but K. Kleve, SO 38 (1963) 29-31, is right to connect these terms with the special sense of ta adela in the Greek of Epicurus.
- 30 It has not been noted in connection with this passage in Lucretius that the noun obscuritas bears a technical sense which connects it with the 'physics' of Greek philosophy; that is, with the inquiry into the invisible structure of the physical world. The most interesting use of this term was pointed out to me by Jenny Clay; in Cicero's De Oratore (I 68) 'physics' is introduced within the tripartite division of philosophy as naturae obscuritas; cf. Fin. V 51, Acad. I 19 with Reid's comment, and Augustine's characterization of the Presocratics, Civ. Dei II 7: qui utcumque conati sunt ingeniis acutissimis praediti ratiocinando vestigare quid in rerum natura latitaret. For Lucretius' expansion of the metaphor contained in vestigare and latitaret, see below, 64-65.
- 31 corpus enim per se communis dedicat esse/sensus (I 423). Lucretius' communis is a translation of Epicurus' $\acute{\epsilon}\pi\iota\ \acute{\alpha}\nu\tau\omega\nu$ (39.8) - in the case of all men.
- 32 That the real patrii sermonis egestas lies in the prepositional system of Latin is a thesis argued with great subtlety by R. Poncelet in his Cicéron Traducteur 44-136.

- ³³ R. Heinze in his commentary to Book III of the De Rerum Natura seems to be the only critic to have put his finger on the precise nature of Lucretius' difficulty (83). Bailey persists in speaking of the "innate difficulty of the ideas" Lucretius had to translate.
- ³⁴ Cf. res occultas, and Kleve's discussion of these terms, op. cit., note 29 above.
- ³⁵ DK B 21a - a formulation which, according to Sextus, met with Democritus' approval.
- ³⁶ They are κενοὶ φθόγγοι resulting in κενοδοξία (cf. DL X 13-14).
- ³⁷ Cf. I 750-751 and II 121, 1070-1076. Analogy is one of the principal topics of Philodemus' Περὶ Σημειώσεως.
- ³⁸ Bailey's translation "in accordance with the prevailing mode of formation" is in essential agreement with the interpretation offered here. That the formula is Epicurean is shown by Colotes' in Lysin: ἀλλὰ μὲν ἢ γε πάντων ἡμῶν ὁμιλία ἦν τηρεῖν τοὺς φθόγγους κατὰ τὸ ἐναργές, Crönert, Koltes und Menedemos 165; cf. ad Hdt. 67.2 and 76.7.
- ³⁹ Opera Omnia V 29, reading τινασθ κατὰ τὴν πλείστην συνηθείαν.
- ⁴⁰ An incomplete list of words so introduced in Epicurus would include eidola (46, cf. Lucretius IV 30), kenon, chora, anaphes physis (40, cf. Lucretius I 449), palsis, Epicuro [33.21], symptomata (70, cf. Lucretius I 458), asomaton (67), metakosmion (ad Pyth. 89), and hypereiseis (Epicuro [24.41] 21).
- ⁴¹ I 926-950, IV 1-25. Epicurus' injunction against the philosopher writing poetry himself is recorded in DL X 121 (Us. fr. 569). The theoretical objection to philosophical poetry is worked out by Philodemus, Rhetorica I 149-151. This question is discussed by P. H. DeLacy, AJP 60 (1939) 87, 90-91.
- ⁴² This is not true in all cases; in connection with the soul mobilitas translates ἐυκίνησις 63.9, cf. III 200, 428, 646.
- ⁴³ Lists of Lucretian hapax legomena and other rare elements in Lucretius' vocabulary are to be found in Bailey, Lucretius I 137, Ernout-Robin, Lucrece I 112-113, Reiley, Studies 26-27, D. C. Swanson, A Formal Analysis of Lucretius' Vocabulary 182-184, and in W. S. Maguiness, 'The Language of

Lucretius' (Studies in Latin Literature and its Influence, ed. D. R. Dudley) 93. None relate these words to the Greek.

- 44 Reiley displays these words in two columns, distinguishing (I) words in Cicero excluded from the hexameter, and (II) words which are possible only in the singular where, theoretically, they can be elided by a following vowel. In practice there are no examples of these words in the De Rerum Natura.

Chapter II
(pages 23-49)

- 45 Ainsi le lecteur sera toujours à même de confronter l'exposé du poète latin avec la pensée de l'original grec, et pourra apprécier la fidélité de l'adaptation, I lviii note 1.
- 46 Theophrast bei Epikur und Lukrez, (Heidelberg 1924). This was Usener's conclusion for Epicurus: *elegisse autem Epicurum perquisitis omnium physiologorum libris quis credat?* (Epicurea xl-xli).
- 47 This is very well shown by Reitzenstein's display of the ancient parallels to Bergsträsser's Arabic text of Theophrastus, 86-108.
- 48 Neither Reiley nor Traglia attempt to give any account of Lucretius' sources, although Reiley states emphatically that it is essential "to understand the exact use made by Epicurus of the Greek originals" (33). Traglia's essay is clearly superior to that of Reiley. Although he does not attempt to determine the sources of Lucretius' language, he often produces his Greek original, led to it by his method of discussing the broad topics of Epicurean atomism rather than focusing on individual terms.
- 49 It is this freedom from an absolutely literal rendering of a text that F. Blatt has styled "le libéralisme préchrétien," 'Remarques sur l'histoire des traductions latines', Classica et Mediaevalia, I (1938) 217-242. Cf. Horace, Ars Poetica 133: *nec tamen exprimi verbum e verbo necesse est, ut interpretēs indiserti solent.*
- 50 Why does Lucretius leave the terms homoeomeria (I 830, 834) and harmonia (III 100, 118, 131) transliterated but untranslated? On another level, R. Poncelet has demonstrated that omission can be as significant as translation: "Le fait le plus considerable, dans les traductions de Cicéron, c'est ce qui ne s'y trouve pas," Cicéron, Traducteur du Platon, 30.

- ⁵¹ Cf. Cicero, Tusc. I 48 and N.D. I 43, cf. Lucretius V 8-9.
- ⁵² Against the "usual, static" view of Epicurean philosophy, see P. H. DeLacy, 'Lucretius and the History of Epicureanism', TAPA 79 (1948) 12-23. By history DeLacy seems to mean shift in emphasis and style of presentation, but not development of doctrine.
- ⁵³ Cf. Lück, Die Quellenfrage im 5. und 6. Buch des Lucrez 7, Reitzenstein, Theophrast bei Epikur und Lukrez 37, 52f, Bignone, l'Aristotle perduto II 400 and Lucretius V 55.
- ⁵⁴ Specialized treatises: Περὶ ἀτόμων καὶ κενοῦ, Περὶ τοῦ ὄραν, Περὶ τῆς ἐν τῇ ἀτόμῳ γωνίας, Περὶ ἀφῆς, Περὶ εἰδώλων, Περὶ φαντασίας.
Polemical tracts: Ἐπιτομὴ τῶν πρὸς τοὺς φυσικούς, Ἀναξιμένης, and, from other sources, Πρὸς Δημόκριτον, Πρὸς Θεόφραστον (Us. fr. 29, Epicuro 15).
- ⁵⁵ Studi Lucreziani 1-20, cf. Bailey, Lucretius I 23-25.
- ⁵⁶ These scholia are to be found at ad Hdt. 39, 40, 73 (=Epicuro [13]). Mention of a Mikra Epitome would seem to imply a Megale, but it is not clear what is meant by the Mikra Epitome. In the Letter to Pythocles (85) the Letter to Herodotus is referred to as the Mikra Epitome, but Diogenes (X 135) says that Epicurus denied divination in any form ἐν τῇ μικρᾷ ἐπιτομῇ. There is no trace of this refutation in the Letter to Herodotus as it has come down to us.
- ⁵⁷ One of the examples given by Lucretius of the simulacra, or the films which flow off bodies and strike the senses, is that of the cicada which sloughs off its tunic (IV 58,). There is, of course, no such exemplum in the Letter to Herodotus, but in the Περὶ Φύσεως Epicurus speaks of the outermost tunic of solid bodies (τοῦ ἐξωτάτου χιτῶνος Epicuro [23.19]).
- ⁵⁸ N. W. DeWitt suggests that for Epicurean Physics the student had a series of graded texts. He would begin with the Mikra Epitome, move on to the Megale, and finally tackle the Περὶ Φύσεως, Epicurus and his Philosophy, 25-26. It is plain, however, that Epicurus meant the Letter to Herodotus for two classes of readers: he wrote it to provide a general account of his entire physical system for those who were unable to go through his fuller expositions of physics, and at the same time, to give a synoptic view of his system for those advanced in it (35-36). See Arrighetti, Epicuro, 450, & DeWitt, 112.

- ⁵⁹ DeWitt, Epicurus and his Philosophy, 26, DeWitt's characterization of the importance of the Megale Epitome as a source for Lucretius is repeated in G. K. Strodach's The Philosophy of Epicurus 96-97.
- ⁶⁰ For evidence of the importance of memorization, note ad Hdt. 35.9, 36.5, 45.1, 68.3 and ad Pyth. 84.3, 6, and especially 116.4.
- ⁶¹ [1] I 149, [2] I 215, [3] I 417, [4] I 482, [5] and [6] I 953-954, [7] II 478-479, [8] II 95, and [9] II 748. Stoicheiomata [1], [2], [3], [5] and [6], [7] are all marked off by rubrics, one of which identifies the proposition for the apeiron by reproducing the Greek of the Letter to Herodotus.
- ⁶² Bailey sees that in the case of [3] it is not necessary to suppose that Lucretius' source was the Letter to Herodotus, although he has in fact translated a part of the Greek text: "but we do not know that the Megale Epitome had not a closely analogous text," II 666.
- ⁶³ This is precisely Pythocles' difficulty with Epicurus' treatment of ta meteora (84.6). Accordingly, Epicurus promises him a σύντομον καὶ εὐπερίγραφον διαλογισμόν (84.5).
- ⁶⁴ The characteristic phrase of source criticism has been "die Quellen, welche Lukrez vor Augen lagen," Lück, Quellenfrage 9.
- ⁶⁵ See especially ad Hdt. 82.2, and compare 36.6: τοῦτο κυριώτατον τοῦ παντός ἀκριβώματος γίνεται τὸ ταῖς ἐπιβολαῖς ὀξέως δύνασθαι χρῆσθαι with Lucretius, perfacile extemplo rationem reddere possis (II 763).
- ⁶⁶ According to Epicurus, he is presenting in this letter a condensation of the major principles of his physical system (κεφαλαιώδέστατα ὑπὲρ τῆς τῶν ὄλων φύσεως ἐπιτετμημένα) 82.10-83 stated simply and briefly - πρὸς ἀπλᾶ στοιχειώματα καὶ φωνὰς συναγομένων 36.7-8). In introducing this letter Diogenes states that Epicurus developed his physical theory in the Περὶ Φύσεως and in the letters κατὰ στοιχεῖον (X 30.3).
- ⁶⁷ The ὄλοσχερώτατοι τύποι of 36.4.
- ⁶⁸ ad Hdt. 36.2, and see note 58 above.
- ⁶⁹ This approach is mainly associated with the name of Guido della Valle. His Tito Lucrezio Caro e l'Epicureismo Campano (Naples 1933) I have not been

able to see. Bailey's criticism of Della Valle's thesis is that "though there are affinities between the treatment of certain themes by Philodemus and Lucretius, these themes are for the most part Epicurean commonplaces, and parallels as close or closer could be found in Epicurus' own works," CR 48 (1934) 150-152.

- ⁷⁰ DeLacy believes that the very fact of his composing a philosophical poem shows that "in spite of his great admiration for Epicurus, Lucretius was outside the living tradition of Epicureanism," 'The Epicurean Analysis of Language', AJP 60 (1939) 90-91. Compare his Philodemus, On the Methods of Inference, vii.
- ⁷¹ Especially as regards the Stoics with whom Epicurus himself seems to have had no quarrel. See DeLacy TAPA 79 (1948) 12-23.
- ⁷² Elementum 8ff. The term στοιχεῖα is in fact applied to the atoms, but in the problematic Letter to Pythocles. This has been taken as another element of proof that the letter can not be genuine. Cf. Usener, Epicurea, xxxvii-xl, and Lück, Quellenfrage, 10-11.
- ⁷³ In a report to the Berlin Academy Diels argued that Lucretius must have read a considerable selection of the Presocratics in Greek, Sitzungsberichte d. preussischen AK. (1918) 917-918.
- ⁷⁴ This is Regenbogen's formulation: "sein Griechenerlebnis ist ein Epikurerlebnis," quoted by L. Edelstein, TAPA 71 (1940) 85.
- ⁷⁵ Cf. DO V, and Cicero, N.D. I 29, I 93.
- ⁷⁶ Us. fr. 11, Epicuro 164.
- ⁷⁷ "Lucrezio, cioè il suo fonte epicureo," Studi Lucreziani 88, note 1.
- ⁷⁸ It is for this reason that Vogliano believed that it could not represent the source of the De Rerum Natura. See Bignone, l'Aristotle perduto, 400, note 1.
- ⁷⁹ Note the plurals facere and cecidere (I 740-741) and compare a papyrus fragment from book XIV of the Περὶ Φύσεως (Epicuro, [27.28] 17).
- ⁸⁰ Metaphysics A, 984a 11-12. Cf. Diogenes of Oenoanda, fr. V col. II (Grilli).

- 81 Ἐνπεδοκλῆς δ'ὁ Ἀκράγου. The similarity is completely external. Acragantinus is most significant in Lucretius' estimate of Empedocles' achievement.
- 82 Empedocles' vaunt is quoted in what W. Crönert has identified as an Epicurean polemic, Kolotes und Menedemos 175. fr. 3.5-6.
- 83 Ὅμβρος for ὕδωρ : DK 31 B 21.5, and 98. See Gutherie, A History of Greek Philosophy, II 158-159.
- 84 Ἡέλιος for πῦρ : DK 31 B 21.3, 22.2, 71.2.
- 85 Lukrez und Empedocles, Hermes 96 (1943) 68-107, especially 101-107.
- 86 Kranz takes Lucretius' statement of the proposition that nothing is created out of nothing [1] back to Empedocles B 12, completely disregarding Lucretius' original in the Letter to Herodotus (83). He recognizes, however, that even when Lucretius takes his formulations from Empedocles, he remains entirely within the Epicurean tradition (90-91).
- 87 For a fuller statement, see Jean Bayet, "Lucrèce devant la Pensée Grecque", MH 11 (1945) 89-100.
- 88 Die Schule des Aristoteles, Heft II fr. 111-121 for the psychology of Aristoxenus and Heft. V, fr. 63 for Strato's demonstration that there can be movement through a continuum of matter.

Chapter III
(pages 50-57)

- 89 ad Q. fr. II 9 3. It has been argued that by poemata Cicero was not referring to the entire De Rerum Natura, but only to a part of it - possibly the proem (F. H. Sandbach, CR 54 (1940) 75-76). U. Pizzani, however, has adduced evidence to suggest that Cicero's rather perplexing poemata can refer to the entire poem, Il problema del testo e della composizione del De Rerum Natura di Lucrezio, (Rome 1959) 38-40.
- 90 On this point, see Bailey, Lucretius II 583.

- ⁹¹ Galen, (De Elementis, I 9, p. 487 Kühn) states that all the 'ancients' gave their works this title: τὰ γὰρ τῶν παλαίων ἅπαντα "Περὶ Φύσεως" ἐπιγέγραπται.
- ⁹² For physis as the equivalent of birth or growth (from φύω) note Empedocles (DK B 8.1,4) where it figures in opposition to the οὐλομένου θανάτοιο τελευτή. In Plato's Laws (892C) this earlier meaning of physis is brought out clearly in: φύσιν βούλονται λέγειν γένεσιν τὴν περὶ τὰ πρῶτα. For the range of meanings given this word in early Greek thought, see W. A. Heidel's Περὶ Φύσεως 'A Study of the Conception of Nature among the pre-socratics', Proceedings of the American Academy of Arts and Sciences 45 (1910) 77-133, and F. Heiniman, Nomos und Physis (Basel 1945) 89-109.
- ⁹³ I. Fischer, 'Le sens du titre De Rerum Natura', Mélanges Linguistiques, (Bucharest 1957) 17-21, argues that the term natura was not the equivalent of physis as it figured in the title Περὶ Φύσεως and notes that Lucretius first uses rerum natura as it would have been familiar to his readers - "sur la naissance des choses" (19).
- ⁹⁴ Lucretius was preceded in this genre of a didactic poem on Nature by Ennius in his Epicharmus (DK 23 B 47-54). What Lucretius' view of his predecessor's achievement in physiology was can be gathered from a confrontation of the first few fragments of the Annales with Lucretius' presentation of Ennius' vision (I 112-126). Ennius' vision is a dream vision (frs. V-VII Vahlen, cf. Epicharmus, fr. I) which is sufficient to explain in part Lucretius' attack on the vanity of dreams: tibi iam fingere possunt somnia quae vitae rationes vertere possint (I 104-105).
- Further, compare fr. IV (Vahlen) with 119; fr. XII with the alternatives given in 112-116; the phrase divinitus in 116 reproduces the divinitus of Ennius (p. 5.10 Vahlen). The antagonism between the teaching of the two poets is apparent in Lucretius' placement of his 'second syllabus' in direct contradiction to the omnem rerum naturam of Ennius.
- ⁹⁵ Oras taken in close connection with exoriri (cf. primordia, exordia) might be added to P. Friedländer's list of examples of Lucretius' 'atomology' (AJP 62 (1941) 16-34. The bond between oras and exoriri is especially appropriate because, by Lucretius' conception of genesis, things (res) emerge by accretion from the darkness of the primordia - dias in luminis oras. The phrase is Ennian (perhaps deriving from Empedocles), but the thought is Lucretian (cf. I 170, 179-180, and 227 - in lumina vitae).
- ⁹⁶ For Parmenides, DK 28 B 8 3-6; for Empedocles generally, see the discussion of W. Kranz, Hermes 96 (1943) 87-88; and for Cleanthes, compare SVF I 121.35.

- 97 In what survives of Epicurus there are only very faint traces of the personification of Nature; in Lucretius, Natura has taken the reins from the hands of the gods and governs her domain by strict law. Compare the expressions of V 77 with II 1090-1140.

The only traces of Physis personified in Epicurus are visible as physis refers to human nature. This is the case in the Letter to Herodotus (75) where human nature is said to be 'taught by things themselves' (αὐτὰ τὰ πράγματα). In his own presentation of this same concept, Lucretius usurps the place of 'things themselves' by Natura (V 1028-1029). Elsewhere in Epicurus physis occurs with the hint of personification only in reference to the requirements of human nature: ad Men. 129.9, 133.3, KΔXV XXV, SV 21, 25, 37. Epicurus does, however, speak of the 'commands of the visible world (ad Pyth. 86), the 'voices of things', and the 'voice of the flesh' (SV 33); in all of these expressions he avoids the word Physis. By contrast, compare Lucretius, III 931-962.

- 98 This observation was brought to my attention by Professor Leo Strauss in a yet unpublished study of the De Rerum Natura.

- 99 In V 242-243 mortalia and nativa are equated; cf. expressions such as corpore nativo (V 241) and nativos animantibus et mortalis... animos (III 417). V 60 defines any compound as mortal.

- 100 In Epicurus physis is in the main descriptive - a kind of thing. The void is the kind of thing which can neither touch nor be touched (an anaphes physis). In the Letter to Pythocles the term theia physis occurs, and seems to refer to the concept of the divine of rival philosophies. By contrast, the Epicurean definition of the divine is τὸ μακάριον καὶ ἄφθαρτον (SV 1).

- 101 For the ethical premises of the entire poem and for physiologia itself, cf. ad Hdt. 76.8-82.9; for the doctrine of divinity (*I 44-49), cf. 76.11-77.11, 78.6-8, and KΔ1; for the fear produced by the simulacra of the dead and absent (I 132-133), cf. SV 24, and Epicurus' letter to his mother, Epicuro 65 4-8; finally, for the function of physiologia, cf. ad Hdt. 78, KΔXI, XII (= SV 49).

- 102 Naturae ratio is Cicero's calque for physiologia, Div. I 90, cf. II 37, and N.D. I 20. But this is not Lucretius' formula, although Reiley (23), Traglia (56, note 332), Ernout interpret it as such.

- 103 This separation is made in most of the commentaries, but it has no more authority than an educated guess. I entirely agree with Bailey that here "the idea is one in Lucretius' mind."

- ¹⁰⁴ ad Hdt. 37.7 (in roughly the same context as Lucretius). In 59.7 theoria and logos are joined, but not as they are in Lucretius where species can not be thought of as speculation. By contrast, Cicero's version of theoria is naturae contemplatio, Acad. II 127, N.D. I 50
- ¹⁰⁵ For the Epicurean versions of Anaxagoras' dictum, note 263 Us. DL X 32.7, and Philodemus' ΠΣ VII 8, XV 25, and cf. XXVII 30 and passim. A thorough study of the principle involved in Lucretius' naturae species ratioque has been made by H. Diller, 'Ὀψις τῶν ἀδῆλων τῶ φαινόμενα', Hermes 67 (1933) 14-42.
- ¹⁰⁶ II 1050-1051, IV 108, 385, 796 (cf. ad Hdt. 47), and V 335.
- Chapter IV
(pages 58-81)
- ¹⁰⁷ One such parallel is, of course, that Lucretius in addressing his poem to Memmius is following the manner of instruction of the epistles of Epicurus; another is Lucretius' recognition of the methodological difficulties of his task (I 136-139) where the context of the Letter to Herodotus makes it possible to identify convisere in 145 as a calque for συνορᾶν in 38.7.
- ¹⁰⁸ Umquam supposes what is explicit in Epicurus' third proposition that the universe is ever the same (39.2-5), cf. Us. 266. This stoicheioma is not translated by Lucretius, but it can be recognized in Book II (294-307) where it is given a special application.
- ¹⁰⁹ A recognition of the antitheological character of this proposition is possibly implied in Aristotle's De Gen. et Corr. 317 b 29; it is quite explicit in Cicero's De Divinatione II 37: non ergo omnium interitus atque obitus natura conficiet, et erit aliquid quod aut ex nihilo oriatur aut in nihilum subito occidat. Quis hoc physicus dixit umquam? Haruspices dicunt. A somewhat similar presentation of the problem might well be present in the notice in [Plutarch] (DG 581.17-18) regarding Epicurus. A fuller and deeper discussion of the principle involved in Lucretius' specific formulation comes from Leo Strauss, Spinoza's Critique of Religion (English trans. New York 1965) 37-52.
- ¹¹⁰ Cf. ΠΣ XIV, XXXIII.

- 111 Aristotle states that the assumption of nihil ex nihilo was agreed on by all physikoi (Physics I 4 187 a 34-35). Note also the agreement on its form prior to Epicurus: Parmenides B 8.6-10; Empedocles B 12; Anaxagoras (Aëtius I 3 5); and Democritus (DL IX 44). With the exception of Democritus, all of these formulations rest on what the Epicureans would call the test of inconceivability - the key terms of the denial being: οὐ φατὸν οὐδὲ νοητόν (Parmenides), ἀμήχανον .. ἀνήνυστον καὶ ἄπυστον (Empedocles); and ἀπορώτατον (Anaxagoras).
- 112 II 119-120; cf. the verb stasiazein by which Aristotle describes Democritus' conception of atomic movement (DK 68 A 37).
- 113 Compare the exemplum cited by Robin at II 116 from Aristotle's De Anima.
- 114 The later Latin equivalent for semeia is, of course, signa. For Lucretius' use of this term, note I 822 (signum sanguis), II 621, III 521. For vestigia used as the equivalent of semeia, note the agreement between II 123-124 and IV 816-817. Supporting the reading of vestigia as a metaphor for semeia/signa are those passages where the simile given in the text above is recompressed into a metaphor: cf. IV 87, 703-705, and V 1456-1457.
- 115 ad Pyth. 96.2: ἐπὶ πάντων γὰρ τῶν μετεώρων (a class of ta adela) (τὰ ἀδηλα) τὴν τοιαύτην ἵχνευσιν οὐ. For the 'soberer' expression, cf. 87.9 and DL X 32.8. <προετέον.
- 116 Cf. ad Hdt. 40.5, 68.9. These qualifications are represented in Lucretius by omnis, ut est per se, natura. Compare the use of the expression τοῦ καθ' ἑαυτὸ νοηθέντος in the closely related consideration of the soul as asomaton (67.3).
- 117 The conception of the void as asomaton is naturally defined by the Epicurean conception of body. In both Stoic and Epicurean physics the description of the immaterial is the same: SVF I fr. 90, II 123.31 (Zeno and the Stoics generally).
- 118 αὐτὴ ἡ ἀσθησις ἐπὶ πάντων μαρτυρεῖ = communis dedicat sensus where the legal metaphor is preserved. For a parallel expression in the Greek of Epicurus, cf. Epicuro [23.48].
- 119 This definition of body is paralleled by a report in Plutarch (adv. Col. 16 1116d): σοφώτερος δὲ τοῦ Πλατῶνος ὁ Ἐπίκουρος, ἢ πάντα ὄντα προσαγορεύει, τὸ ἀναφές κενὸν, τὸ ἀντερεῖδον σῶμα, τὰς ἀρχὰς, τὰ συγκρίματα. With this compare ad Hdt. 44.13, and ΠΣ XVIII 5.

Plutarch's reference to Plato would seem to mark off that conception of the immaterial which Epicurus' definitions of body and void were designed to contradict.

- 120 Traglia (31) compared *cluere* with *κατηγορεῖσθαι*. For this context at least there is a fix in ad Hdt. 68.6-7.
- 121 P. Natorp, Geschichte des Erkenntnisproblems, 228-230; C Giussani, Studi Lucreziani, 27-38.
- 122 Bailey translates *symbebekota* as "a permanent property," explaining that such a meaning is "more naturally associated with the perfect participle: 'that which has come to be permanently with a thing' (Atomists 301, note 2). Comparable are Epicurus' use of the adjective *συμφυῆ* (ad Hdt. 54.3, Epicuro [5]) and *coniuncta* as it describes the association of soul and body in Book III of Lucretius.
- 123 Metaphysics 1025 a 30-34; Posterior Analytics I 73 a 18-22, 39-41; 76 b 11-16.
- 124 The interpretation of this fragment is much disputed, but the very special sense Epicurus gives the term *symbebekota* supports the opinion that this fragment comes from a letter of Epicurus (Epicuro [118]).
- 125 Cicero's *individua* is one of his most acclaimed translations of a Greek philosophical term (cf. Plutarch, Cicero 40). His originality in this is questionable in light of a doxographic notice figuring in one of the prefaces to Vitruvius' De Architectura: Democritus quique est eum secutus Epicurus atomos, quas nostri insecabilia corpora, nonnulli individua vocitaverunt (II praef. ii).
- 126 Us. 267; cf. ἀρχάς . ἀμοίρους κενού for Leucippus (DK 67 A 14) and ad Hdt. 41.3.
- 127 Us. 205.27; cf. Aëtius I 3 18, Us. 192.27, and by contrast the term fragili natura of I 580.
- 128 These passages in Epicurus and Lucretius are thus connected by a refutation of εἰς ἄπειρον ἢ τομή. In Epicurus, and following him, Lucretius, there are good indications that the concept of the atom was won and precisely defined in a struggle with the rival and contradictory argument for an infinite analysis of matter.

- 129 Ernout and Robin (Lucretius I 132) suggest Anaxagoras with good reason. Compare I 844 with DK 59 B 1, 3: καὶ ἴσον ἐστὶ τῷ μικρῷ πλῆθος, πρὸς ἑαυτὸ δὲ ἕκαστόν ἐστι καὶ μέγα καὶ μικρόν. It is this argument which seems to provoke: ergo rerum inter summam minimamque quid escit? (I 619). By Lucretius' time the question could also be asked of Chrysippus (cf. SVF II 159. 1-4).
- 130 This is the characterization of Simplicius (Us 268). The passage he is commenting on is an example, among a good many others, of Aristotle's critique of early atomism (Physics 231a).
- 131 The terms of Aristotle's critique and those of Epicurus' reply are now discussed by D. J. Furley, Two Studies in the Greek Atomists, 111-130, with a collection of relevant texts.
- 132 Woltjer illustrated this by noting the various shapes named in IV 652-654: triangular, quadrangular, round, polygonal, hookshaped (hamata) - all of which can be analysed by geometry.
- 133 A critique of Plato's teaching on the elementary solids in the Timaeus is preserved from this book to a fair extent. For an edition and commentary, see W. Schmid's Epikurs Kritik der platonischen Elementenlehre and Epicuro [27.22] - [27.27] 10.
- 134 Compare the term artes partis in V 352-354 where this doctrine is referred to again.
- 135 Thus the pains to establish ἄκρον (extremum), which describes body as defined by space, as the equivalent of πέρας which can apply to either πλῆθος or μέγεθος (cf. Sextus M IX 333). Possibly it is just this fallacious extension (concessis rebus) which Cicero (giving a Stoic objection) represents as such a censurable distortion of logic in De Divinatione II 103 (Us 297).
- 136 DK 47 A 24; discussed by Robin at I 968.
- 137 Quoted from A. Koyré, Newtonian Studies, (Cambridge, Mass. 1965) 87.

Chapter V
(pages 82-106)

- ¹³⁸ One among many possible examples of this is Lucretius' treatment of the magnet which he prepares for by a review of the master propositions of his physics, VI 961-990, cf. ad Hdt. 82.1-2, 36.6.
- ¹³⁹ For the integration of the text of Lucretius at 1013/1014, see Appendix.
- ¹⁴⁰ I 984-997. Cf. ad Hdt. 60 and Bailey, Lucretius II 768.
- ¹⁴¹ In his exposition of this section Bailey glosses Lucretius' spatium summai totius omne (I 984) by "the whole extent of the entire sum" (Lucretius II 768) yet translates "Moreover, if all the space in the entire universe were shut in on all sides; and were created with borders determined" (I 277). 'For the bearing of this passage on the text of Lucretius at 1013/1014 see Appendix.
- ¹⁴² DO VI 11; Grilli compares II 547-568.
- ¹⁴³ ἄνευ γὰρ κίνησις οὐκ ἔστι γένεσις ἢ φθορά(Us 306).
- ¹⁴⁴ Such a fact is assumed in I 952, proved in 992-993, cf. II 95-96. Lucretius' solidissima material corpora perpetuo volitare invicta per aevum(I 951-952) is closer to the Greek of Epicurus than his later and fuller treatment of the proposition [8], indicating possibly that he knew some of Epicurus by heart.
- ¹⁴⁵ [8] has an obvious application to the simulacra. Compare ad Hdt. 48.6 with IV 157-158, 218ff.
- ¹⁴⁶ Here (with brevibus spatiis) the equivalent of the more abstract παλμὸν ἰσχυσαί. By contrast, cf. I 1025.
- ¹⁴⁷ Cf. ad Hdt. 63.1-66.4, and especially 65.7-66.4: λυομένου τοῦ ὄλου ἀθροίσματος ἢ ψυχὴ διασπείρεται which Lucretius represents in III 323, III 434. Lucretius' equivalents for - κατὰ τὴν ὁμούρουσιν καὶ συμπαθειάν are contagia (III 345) and consensus (III 739-740).
- ¹⁴⁸ Examples already encountered have been convisere = συνορᾶν (I 145) and intactile = ἀναφές (I 437).

- 149 Munro successfully explains what he considers a dubious matter without reference to the Greek, for which cf. ad Hdt. 42.3-4 [6, 1] and I 1053-1057. Other parallels come from the Περὶ Φύσεως (Book XI) Epicuro [24.4] 22, [22.43], and ad Hdt. 50.3. The natural equivalent in English is, of course, pressure.
- 150 For its application in Epicurean psychology note III 235, 292-293 and Aëtius (IV 3 11, DG 388-389) cf. Bailey. Atomists, 340-341.
- 151 For celestial (152) mechanics there is a striking coincidence between the De Rerum Natura and Epicurus' Περὶ Φύσεως which, in view of the prejudice against the ΠΦ as a possible source for Lucretius, is worth giving in full.

ὁ γὰρ (ἡ μονή) ὑ-
 πὸ τῆς τοῦ ἀέρος φύσε-
 ως αὐτῆι ὑπάρ[χ]ει, τὸ
 [δ]ὴ στελλομένην ἴσον
 [ἀ]πέχε[ι]ν ἀπὸ τοῦ τρ[ο-]
 10 [χ]οῦ πανταχόθεν,
 ὡσπερὶ τοιαύτη[ν] λ[έ-]
 γε[ι ἐ]ν μέσωι κείσθ[αι] τοῦ
 κό[σ]μου -

Epicuro [24.43] 4-13
 cf. [24.43] 22-28

Terraque ut in media mundi regione quiescat,
 evanescere paulatim et decrescere pondus
 convenit, atque aliam naturam subter habere
ex ineunte aevo coniunctam atque uniter aptam
partibus aeriis mundi quibus insita vivit.
 propterea non est oneri neque deprimit auras.

(V 534-539)

The partes aeriae mundi must have been the subject of the ἀραιὸν πέρας of Demetrios Lakon (Crönert [KuM, 122]). Bailey notes that the exemplum found in V 540-542 can be taken back to this same papyrus fragment of Epicurus (Addenda, III 1756-1757).

- 151 The ethical consequences are suggested in 251-260. The gravity of these consequences was keenly felt by critics of the clinamen; Plutarch (281 Us. p. 361) calls it ὑπὲρ τῶν μεγίστων σμίκρον οὔτω πρᾶγμα καὶ φαῦλον. The consequences of its alternative in the ἀνάγκη of earlier atomism was even more keenly felt by its proponents. Cf. ad Pyth. 90, ad Men. 134, and Pap. Herc. 1056 (DK 68 A 69), Epicuro, [31.30] 7-15 where the clina-
men is not necessarily involved; the ethical consequences of such an argu-

ment are quite clear.

- 153 'La dottrina epicurea del clinamen, sua formazione e sua cronologia', Atene e Rome 8 (1940) 159-198. Bignone's arguments are accepted by Bailey (Addenda III 1752) and Alfieri, Atomos Idea, who gives an account of the Epicurean reaction to Democritus' Ananke (103-105).
- 154 The most significant Greek testimony for Epicurus' argument for the clinamen is Philodemus, Περὶ Σημειώσεως XXXVI 11: "It is not sufficient to demonstrate the swervings of the atoms by appealing to chance events and the element of causation within ourselves (τὸ παρ' ἡμᾶς); it is necessary to go on to show that such a hypothesis is in conflict with no other piece of evidence."
 Τὸ παρ' ἡμᾶς is one element of proof. It is an appeal to common experience - what Epicurus calls ὁ παθολογικὸς τρόπος [31.33] 5 (cf. ad Hdt. 38.6, 63.1) and supports Lucretius' argument in II 251-293. It is unlikely that Epicurus advanced beyond this proof in the ΠΦ (despite Arrighetti's interpretation of [31.22] 13ff; see his Note, 575).
- 155 Bailey's gloss is "incomprehensible, not to be grasped by the mind" (Epicurus, cf. Atomists 288) - for which he compares περιληπτικῶς in 40.4. Also comparable are Epicuro [24.17] and especially [31.13] 6-9. Diels translation is "unfassbar vielen Atomgestalten" (Elementum 5, and note 1).
- 156 Some of these shapes seem to be named by an annotator of the MS of Epicurus' Physics, (Epicuro [27.23] 10).
- 157 Such seems to have been the position of earlier atomism; cf. Aristotle De Gen. et Corr. 315 b 6.
- 158 For this entire question W. Schmid's Epikurs Kritik der platonischen Elementenlehre (Leipzig 1937) should be consulted (commentary 16-56).
- 159 The elements Epicurus refers to as οὐσιώδη σύγκρισιν (Epicuro [27.22] 9) - a term which Schmid considers an adaptation of Aristotle's οὐσία σύνθετος (111.18).
- 160 So Usener in his exposition of the proposition in Epicurus (Epicurea 375); the atoms are non infinitas, sed non defiendas.
- 161 A work entitled Περὶ τῆς ἐν τῇ ἀτόμῳ γωνίας figures in Diogenes' list of the best of Epicurus (DL X 28).

- 162 Epicuro [27.25] 13.
- 163 A nice illustration of the difficulties Lucretius encountered in presenting the atomic basis of taste is given by J. B. McDiarmid in AJP 80 (1959) 65-66.
- 164 N.D. II 93; Acad. I 24-25. For a presentation of the term, see Meillet's discussion in REL 3 (1925) 214-220; Poncelet calls it a "néologisme mort-né dans la prose classique" (Cicéron Traducteur 19, note 1).
- 165 Similarities between Lucretius' Latin and its original in the Letter to Herodotus are noted by A. E. Raubitschek in AJP 59 (1938) 219.
- 166 For metathesis, compare mutato ordine I 677, 681, 801, and partis ... ordine traiecere III 513.
- 167 πρόσοδοι/ἄφοδοι: abitu, aditu I 677; discedere, adire, attribui I 680-681; deemptis paucis paucisque tributis I 800; cf. III 513-514, and ad Hdt. 39.4-6. The best illustration of this mechanism is Lucretius' elementa paradigm.
- 168 Compare DO V iii. For the order of a preliminary refutation introducing the Epicurean solution to a problem, cf. III 94-135; N.D. I 10 (Velleius); and from Epicurus' On Nature, Epicuro [27] and [30]. Westman discusses the matter in Plutarch gegen Koltes 94-95.
- 169 55.8-10; cf. I 647-649.
- 170 The scholiast to 74.1 draws this conclusion: δῆλον οὖν ὡς καὶ φθαρτούς φησι τοὺς κόσμους, μεταβαλλόντων τῶν μερῶν V 235-246. Quite possibly the scholiast is thinking of Epicurus' discussion of these transformations in his On Nature; relevant are Epicuro [24.26] 1, [27.16], ad Pyth. 99.8 and Lucretius V 235-325 and I 782-802. This principle is applied to a variety of problems in Lucretius: I 763-768, III 517, V 235-246.
- 171 Stringui (I 666, II 828) seems to represent Epicurus' seemingly more technical κατὰ τὴν περιαιρέσει (55.2).
- 172 Thus G. Müller argues that II 748-756 can not belong here since these lines make no sense in this context and rather belong to I 792-793. See Appendix.

¹⁷³ Editors refer the phrase to I 76 and I 595 which is apposite but imprecise. There are conceptual limits beyond the atoms (coniuncta), but their origin is atomic. Bailey explains that "if a thing passes these limits, it changes, ceases to be itself, and ceases to exist." The question remains: what limits? Cf. V 126-131.

¹⁷⁴ Plutarch, adv. Col. 16 1116e (Us 282); cf. Westman, Plutarch gegen Kolotes 55-60.

Chapter VI
(pages 107-118)

¹⁷⁵ See note 40 above for the introduction of novel terms. II 123-124, and especially V 181-186 give a good idea of how general conceptions are formed. The warning at IV 816-817 is worth remarking for the dangers of induction.

¹⁷⁶ I 58-61, IV 50-53, V 181-186.

¹⁷⁷ The argument is similar in DO II ii; cf. Traglia, De Sermone Lucretiano, 65-68.

¹⁷⁸ The possibilities of sound are beautifully illustrated in V 1062-1090 and IV 542-548.

¹⁷⁹ Traglia, De Sermone Lucretiano, 68, cf. Munro I 11, and Weise, Die griechischen Wörter im Latein, 242.

¹⁸⁰ Homoeomeria (I 830) seems to indicate a doxographic source; harmonia (III 100, 118, 131) is quite deliberately left a Greek word since as such it shows up the violence of wrenching the term from its proper place in music (III 130-135, cf. Plato, Phaedo 95A, and Wehrli, Die Schule des Aristoteles, II frs. 118-121). This accounts for two of the 58 Greek words Traglia lists for Lucretius' poem (16-17); four others are related to natural history and appear in Books V and VI (aegoceros V 615, prester VI 424, crateres VI 701, and magnes VI 1046). Aer and aether belong in this list.

¹⁸¹ Compare the teaching of Aeneas' docta comes, Aeneid VI 292-293.

¹⁸² For a discussion of this dream, see W. R. Hardie, CQ 7 (1913) 188-195.

- 183 "It should be noted that, whereas earlier thinkers regarded ψυχὴ and νοῦς as two separate existences, Epicurus, wishing to insist on their structural identity, spoke of them collectively as ψυχὴ, of which he distinguished a λογικὸν and ἄλογον μέρος. Lucr.'s use of the two similar words animus and anima is doubtless intended to have the same effect." Lucretius II 1006.
- 184 Such phrases are discussed as periphrases by Reiley, Studies, 3, note 1, and Bailey, Lucretius I 142-144. Seemingly pleonastic modifiers reflecting the etymology of the words modified are discussed by E. S. McCartney, CP 22 (1927) 194-200.
- 185 The doctrine of the minimae partes and the description of the second species of motion are presented with no view to their application later in the De Rerum Natura.
- 186 Note 144 below.
- 187 Contrast the vigour of metaphor in Empedocles B 57 and 61 with Lucretius' imitation (V 837-843).
- 188 "Models thus resemble the metaphors in ordinary language When words normally used in a given context seem to fail, we seek help from words which, usually, belong to another context." E. H. Hutton, The Language of Modern Physics (London 1956) 84.
- 189 Thus Guthrie says of the atomists: "the most striking thing about their achievement is the extent to which they freed themselves from the anthropomorphic conception of the universe with which the microcosmic theory is most naturally linked" A History of Greek Philosophy II 472.
- 190 These passages are conveniently displayed by Bailey, Lucretius I 162-163 and more fully by Diels, Elementum 5-7.
- 191 This language is reflected in the Σ: καὶ τὸ μὲν τι ἄλογον τῆς, ὁ τῷ λοιπῷ παρεσπάρθαι σώματι. (66.7).
- 192 Exhalant V 462: compare the process of evaporization as it is described by the verb ἐξατμίζεσθαι: Anaximander A 11; Parmenides A 37: καὶ τῆς μὲν γῆς ἀπόκρισιν τὸν ἀέρα διὰ τὴν βιαιότεραν αὐτῆς ἐξατμισθέντα πίλησιν. For the transformation from water to aer, note Chrysippus SVF II fr. 527, and what seems to be Epicurus' criticism of a

similar doctrine, Epicuro [27.21] 5.

Fumare V 464: comparable in Greek is the verb θυμιαθῆναι by which Aëtius describes Empedocles' derivation of aer from water (II 6 3 = DK 31 A 49).

¹⁹³V 467-470 approaches

ἀήρ

Τιτὰν ἠδ' αἰθήρ σφίγγων περὶ κύκλον ἅπαντα

Robin notes that late diffusus recalls Empedocles' διαψιλὸς αἰθήρ (B 39.1).

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