Such is also, I suggest, the kind of cause Philodemus wishes to designate by his term δραστικὸν αἴτιον, for which *causa efficiens* would be a natural Latin translation.[34] Clear evidence of his intended meaning can be found in the specific analogy offered earlier in his reply to the third argument: 'For just as one cannot become wise without learning the alphabet, but it will not follow that if someone has learned the alphabet, that person is also wise, so …' (col. 49,33–9). Literacy is, of course, a necessary condition for becoming wise, but literacy by itself does not suffice for wisdom. Accordingly, Philodemus' subsequent use of the phrase δραστικὸν αἴτιον should not be understood as designating an 'efficient', or even generically 'active', cause. What Philodemus contends that his opponents have not shown – and would have to show in order for them to make their point – is not that the bare supposition of harm is 'also an *efficient cause* of anger', as *per* the standard translations,[35] but that this supposition is a cause sufficient or responsible for producing the effect in question.

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[34] I do not claim that Seneca's own use of *efficiens* in *Ep.* 87 must represent an attempt to translate into Latin the adjective δραστικός from a specific Greek source (e.g., Posidonius himself). I content myself with pointing out that *causa efficiens*, which could serve equally well to translate either δραστικὸν αἴτιον or ποιητικὸν αἴτιον, was in fact used relatively early in the imperial period to designate a specific kind of active cause rather than active causes generically. One might speculate that the use of δραστικός to designate a particular species of active cause originated with a desire to avoid confusing this species with its genus, for which the adjective ποιητικός had been in common use at least since the time of Aristotle. If any such technical distinction ever did exist between these two Greek adjectives, however, it had clearly faded by later in the imperial period, as indeed had the use of either to refer to a specific kind of active cause. As previously acknowledged (n. 12), Galen regularly employs δραστικός and ποιητικός synonymously to refer to active causes generally.

One passage from Galen's commentary on the sixth book of Hippocrates' *Epidemics* [= 17b.202.13–18 K.] perhaps reflects an earlier usage of δραστικός in a more restricted sense, though the words αἴτιον δραστικόν appear there only in Wenkebach's supplement '*ex interpr. arab.*' (E. Wenkebach, *Galeni in Hippocratis sextum librum epidemiarum commentaria i–vi* [*Corpus medicorum Graecorum* 5.10.2.2; Leipzig, 1940], 238). A remnant of such an earlier, more restricted usage may also possibly be detected in the frequent use of comparative and superlative forms of δραστικός and ποιητικός in imperial discussions of causation. A δραστικώτερον αἴτιον is not more of an active cause than other δραστικὰ αἴτια, but it might reasonably be regarded as more responsible for determining a particular effect.

[35] Tsouna, for one, seems aware of the tension between her translation of δραστικὸν αἴτιον and the sense the specific context in *On Anger* demands. Her discussion of the passage in question (= Tsouna [n. 7], 237–8) is replete with references to necessary and sufficient conditions, but the words 'efficient cause' found in her translation are tellingly absent from the accompanying analysis.

DE NATURA DEORUM 1.65, SAVING THE TEXT

There is no need to follow Lambinus (ad Lucr. 1.266) and all subsequent editors in positing a lacuna after *Nihil est enim*. The text makes sense as given in the manuscripts, and indeed better sense than it does on proposed supplements.

The MSS reading is as follows (in the translation, I number the clauses for convenience of reference):

nihil est enim quod vacet corpore, corporibus autem omnis obsidetur locus; ita nullum inane, nihil esse individuum potest.

(1) for there is nothing that lacks body, but (2) every place is occupied by bodies; thus (3) there can be no void, (4) no indivisible body.

There are two grounds for positing the lacuna. First, the preceding claim (*quae* [*sc. atomi*] *primum nullae sint*) demands an argument against the existence of atoms, but the first three clauses in the passage constitute an argument against void. Second, as the text stands *primum* is unanswered. (Coleman's suggestion that *concedam igitur* … in ch. 67 answers to it[1] has won little favour.[2]) Therefore it has been supposed that the argument against atoms has dropped out, and that the final two clauses of the passage state first (3) the conclusion that follows from premises (1) and (2), and second (4) the conclusion of the missing argument.

The suggested supplements (reported in Pease and Dyck, ad loc.) hardly improve the matter:

(a) *nihil est enim <minimum, deinde non est inane, nihil enim est> quod vacet corpore* (Lambinus) does not give us an argument, only two virtually tautological assertions: first, there are no atoms because there is no smallest [body]; next, there is no void, because there is nothing that lacks body …

(b) *nihil est enim <in rerum natura minimum, quod dividi nequeat; deinde, ut sint, moveri per inane non possunt, siquidem id dicis inane> quod vacet corpore* (Schoemann) suffers from the same fault: *minimum quod dividi nequeat* is tautologous with atom, and Schoemann explicitly makes *quod vacet corpore* synonymous with void.

(c) More radically *nihil est etiam quod vacet corpore; corporibus autem* [or *enim*] *omnis obsidetur locus* (Davies) does away with any argument for the existence of atoms.

(d) *nihil est enim quod vacet corpore, corporibus autem omnis obsidetur locus; <omne autem corpus dividi potest, ut omnis locus.> ita nullum inane, nihil esse individuum potest* Konstan (as reported by Dyck, p. 146) gives an argument, in which, however clause (1) is irrelevant.

If we leave the text alone, there is a decent argument which depends on the principle that the existence of atoms presupposes the existence of void. The void plays two fundamental roles in ancient atomism: it enables the atoms to move and it allows them to be individuals, separate entities. If there were no void, no version of atomic theory could account for the cosmos. There would just be a single mass of matter unable to be divided or to move. An atom, if you like, but unique, and therefore unable to serve as a basic entity in a cosmos. Thus an argument against void amounts to an argument against atoms as well, i.e. (3) entails (4). And the first three clauses of the passage contain (as we shall see) an argument against void.

Immediately after this argument is concluded, Cotta, who in *DND* represents the sceptical Academy, apologizes for basing it on positive physical theories (*haec ego nunc physicorum oracla fundo, vera an falsa nescio, sed veri tamen similiora quam vestra* (ch. 66).) The *physici* in question are the Stoics,[3] who held that body is the only thing

[1] R.G.G. Coleman, 'Cicero *De natura deorum* I 65 and the Stoic criticism of the atomic theory', *Mnemosyne* ser.4:13:1 (1960), 34–8, makes this suggestion in the course of defending the MS reading. The present paper supports Coleman's conclusion. It construes the argument of the passage somewhat differently from Coleman and attempts to strengthen Coleman's explanation of the lack of a correlative for *primum*.

[2] Dyck (ad loc.) rejects it (A.R. Dyck [ed.], *De Natura Deorum liber I* [Cambridge, 2003]).

[3] Coleman shows this well (op. cit.).

that exists (which can be taken to be logically equivalent to [1] in our passage) and that the cosmos is a plenum (there is no void in the cosmos). They also believed in place, which although it does not exist, nevertheless subsists (ὑφίστασθαι) as an 'incorporeal.'[4] The doctrine that the cosmos is a plenum (that is, fully occupied by existing things, thus by bodies) entails that every place is occupied by (one or more) bodies (viz. [2]). It follows from (1) that there can be no void in any existing thing, i.e. in any body, and from (2) that no place can be empty, and so there can be no void in between bodies. (1) and (2) together yield (3), that there can be no void, which, we have seen entails the desired conclusion (4), that there can be no such thing as an atom.

There remains the matter of the lack of anything to correspond to *primum*. It seems to me that this is not a serious objection. Immediately after the lines quoted in the previous paragraph, Cotta veers off into abuse of the atomic theory (ch. 66) and chides Velleius for his fanatic adherence to Epicureanism (ch. 67). He then goes on to his next point, that even if all things including the gods are composed of atoms, it follows from the principles of atomic theory that the gods are not eternal (*concedam igitur ex individuis constare omnia; quid ad rem? deorum enim natura quaeritur. sint sane ex atomis; non igitur aeterni*, chs. 67–8).[5] This kind of move is characteristic of Cotta's refutation. He begins (ch. 65) by arguing that atoms do not exist – which is of course fatal to the Epicurean conception of the gods. He then (ch. 68) shows that even if atoms did exist an equally fatal problem would arise: the gods would not be eternal. The Epicureans met this objection by saying that the gods do not have bodies and blood (which are subject to perishing), but have quasi-bodies and quasi-blood (which somehow are not). Cotta argues that this is an unjustified dodge and an incomprehensible claim (chs. 69–75), and then proceeds to say that even if the claim were true, still further objections can be raised to their views (chs. 75–6). He next attacks the Epicurean conception of anthropomorphic gods (chs. 76–102), and then grants for the sake of argument that they have human appearance in order to challenge Epicurean opinions on where the gods reside, how they live their lives, and in what their happiness consists (chs. 103–14). It thus turns out that the rejection of the atomic theory is the first (*primum*) of a series of claims (each of which is supported by a separate argument), any of which by itself controverts Epicurean theology, and which cumulatively show that the Epicurean view of the gods is objectionable at many levels: those who disbelieve in the atomic theory should not accept it, since the atomic theory is in fact false; nor should those who believe in the atomic theory accept it, since that theory requires compounds to be without exception perishable; nor should even a person who believes in atomic compounds with eternal quasi-bodies (a befuddled idea, Cotta insists) accept the anthropomorphic view of the gods that the Epicureans espouse; and even someone who believes in anthropomorphic gods with eternal quasi-bodies made of atoms should admit that the idle life assigned to them by the Epicureans has no reasonable claim to be happy.

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[4] See Sedley's discussion in K. Algra (ed.), *The Cambridge History of Hellenistic Philosophy* (Cambridge, 1999), 395–8.

[5] The long distance (three chapters) intervening between *primum* and this second point would be enough to excuse the absence of a correlative particle, especially since the material in chs. 66–7 digresses from the main line of thought.