

Greco-Roman Seismology and Seneca on Earthquakes in *Natural Questions* 6*

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The broad aims of this paper are to locate Seneca's treatment of earthquakes in the sixth book of his *Natural Questions* in the ancient seismological tradition on which he so conspicuously draws; and, more particularly, to examine the idiosyncratic initiatives which potentially transform his treatment into a highly original mode of literary-philosophical investigation not just into the cause of earthquakes, but also of how a 'scientific' understanding of them can at least partially quell the intimidating effect of such wonders of nature. On this approach *Natural Questions* 6 is perhaps concerned not so much with earthquakes *per se* but with shaping attitudes towards the natural world as a whole, inculcating in us a vision of such phenomena as but 'normal' aspects of cosmic functioning. Earthquakes take on a suggestive figurative significance in this respect: if a catastrophe of such magnitude can be 'normalized' by Seneca's effort to retrain our perspective, this radical shift of outlook potentially offers protection against *any* of life's catastrophes, real or imagined, great or (relatively) small. The earthquake, that is, may serve in *Natural Questions* 6 as a metaphor for life's more traumatic experiences and challenges, and the philosophical and psychological methods of coping with trauma that Seneca rehearses here may prove to be flexible in their applicability to so many other aspects of our existence. But while much will be made below of Seneca's own creative experimentation within (and sometimes against) the seismological tradition, one important debt of his must be acknowledged at the outset: that owed to Lucretius.

The powerful influence that Lucretius exercised on *Natural Questions* 6 has recently been well surveyed by De Vivo¹ and fully confirms the special regard in which Seneca holds him elsewhere.² Beyond the general relationship that will be explored below between *Natural Questions* 6 and *De Rerum Natura* 6, however, my initial focus in Section I will be on methodological overlaps between Lucretius and Seneca: the latter, I shall argue, uses a consciously Lucretian technique of 'normalizing' such traumatic phenomena as earthquakes through soothing analogy and by presenting such occurrences as anything but aberrational in the great scheme of nature. But Seneca will subsequently be seen to depart from Lucretius in developing his own idiosyncratic approach to investigating nature. His doxographical listing of different theories of earthquake in *Natural Questions* 6 is carefully orchestrated, I shall argue in Sections II and III below, to lead us on a conceptual journey from sight to insight, the mind's eye increasingly our guide as we leave behind the world of the particular (*this* intimidating earthquake, *that* shocking eruption) and begin instead to locate our experience of individual disasters in the context of the world-whole. This movement in a universalizing direction will be seen to coincide in Section IV below with Seneca's (Stoic) vision of the unified cosmic body as a living organism, air its pervasive animating force. On this 'one-world' approach, no single incident, however disturbing in itself, is singular or separate from Seneca's reassuring vision, sampled in Section V

* Unless otherwise stated, all references to the text follow H. M. Hine's Teubner edition (1996). I am indebted to the editor and the anonymous reader(s) for helpful criticism and advice; and to H. M. Hine for allowing me to benefit from a preview of his article in this volume.

¹ A. De Vivo, *Le parole della scienza: sul trattato de terrae motu di Seneca* (1992), esp. 82–9, 91–3, 96–8, 104–5.

² cf. *Ep.* 58.12 (Lucretius aligned with such luminaries as Cato and Cicero) with G. Mazzoli, *Seneca e la poesia* (1970), 206–9.

below, of a steady universal process. When we return in Section VI from this universal perspective to review the particular details of the Campanian earthquake as reported at the opening of *Natural Questions* 6, we shall find in 6.1.1–3 a concentration on localized detail and apparently singular phenomena that runs counter to the wider, alleviating and ‘normalizing’ vision that the rest of the book promotes. The Campanian earthquake, so shocking at first sight (*N.Q.* 6.1.1–2), may thus be viewed from a different, becalming perspective on second, and fuller, sight — a perspective that might be said to provide important equipment for life more generally.

I

Despite their different allegiances, Epicurean and Stoic, both Lucretius and Seneca share the goal of alleviating fear of earthquakes and other marvels of nature by offering a rational explanation of their cause(s). So, in *De Rerum Natura* 6, Lucretius’ treatment of earthquakes (535–607) contributes to his broader effort to banish ‘terrorem animi’ (39) by allowing ‘the outer aspect and inner law of nature’ (41 ‘naturae species ratioque’) to prevail over superstition in our responses to thunder, lightning, thunderbolts, and other such occurrences. In leading us from ‘blind reasoning’ (6.67 ‘caeca ratione’) to ‘ratio uerissima’ (6.80), he works to free us from fear of the gods and so to prevent our reversion to ‘old superstitions’ (6.62 ‘antiquas ... religiones’). So also Seneca: taking his starting-point from the recent news that an earthquake had devastated Pompeii and surrounding parts of Campania in 62/3 C.E. (*N.Q.* 6.1.1–2),³ he too moves to quell this stirring of *religio* in the face of natural disaster by offering a ‘scientific’ explanation of the event. If a rare phenomenon such as an earthquake or an eclipse inspires religious awe in men’s minds (6.3.3 ‘religionem incutit mentibus’), reason has the opposite effect (6.2.1 ‘ratio terrorem prudentibus excutit’), steadying the mind that has experienced its own secondary form of collapse (cf. 6.1.3 ‘motae ... mentis’)⁴ and struggles to re-consolidate its own shaken foundation; for what Seneca envisages at 6.1.5 as the literal shaking of the *fundamentum mundi* is inseparable in his narrative from psychological disturbance.

If a familiar Lucretian technique is to place the devastation caused by a given phenomenon in an alleviating perspective by casting that event as but a minor occurrence in the

³ Sources, inscriptional evidence, bibliography: E. Guidoboni (with the collaboration of A. Comastri and G. Traina), *Catalogue of Ancient Earthquakes in the Mediterranean Area up to the 10th Century* (1994), 196–210 with G. H. Waldherr, *Erdbeben: Das aussergewöhnliche Normale. Zur Rezeption seismischer Aktivitäten in literarischen Quellen vom 4. Jahrhundert v. Chr. bis zum 4. Jahrhundert n. Chr.* (1997), 71–2. Tacitus dates the earthquake to 62 C.E. (in the consulship of P. Marius Celsus and L. Afinius Gallus: *Ann.* 14.48.1, 15.22.2), but Seneca would seem to date it to 5 February in 63 C.E. in naming C. Memmius Regulus and L. Verginius Rufus as consuls (cf. Tac., *Ann.* 15.23.1). Despite efforts to reconcile the different dates by positing separate earthquakes (see M. Henry, ‘L’apparition d’une île: Sénèque et Philostrate, un même témoignage’, *AC* 51 (1982), 174–9), many scholars have accepted the Tacitean date and adjudged 6.1.2 ‘Regulo et Verginio consulibus’ an interpolation (so marked in H. M. Hine’s Teubner text (1996), 229); cf. H. M. Hine, *An Edition with Commentary of Seneca, Natural Questions, Book Two* (1981), 41–3, and also his ‘The date of the Campanian earthquake: A.D. 62 or A.D. 63, or both?’, *AC* 53 (1984), 266–9; Guidoboni *et al.*, 199. But for an important update and review of the whole question see now A. Wallace-Hadrill, ‘Seneca and the Pompeian earthquake’, in A. De Vivo and E. Lo Cascio (eds), *Seneca uomo politico e l’età di Claudio e di Nerone. Atti del Convegno internazionale (Capri 25–27 marzo 1999)* (2003), 177–91, inclining to the view that ‘the manuscripts of Seneca’s *Natural Questions* are right to place it in AD 63’ (191), and casting ‘[t]he hypothesis of “interpolation”’ as ‘a last resort, to which we should only turn if there is a compelling reason’ (190–1). Hine (p. 72 in this volume) in turn revisits the case for interpolation in his own judicious weighing (pp. 68–72) of Wallace-Hadrill’s arguments.

⁴ *moueo* of earthquakes at e.g. 6.4.1, 18.1, 26.4 etc. (cf. *OLD motus* 1c).

universal process (so e.g. 6.647–54, in connection with Etna erupting),⁵ Seneca too moves to ‘normalize’ the Campanian earthquake by locating it in a larger context of similar happenings across the ancient world (6.1.13).⁶ For Lucretius the task of rational explanation replaces ‘a rhetoric of *mirum*’ with ‘a rhetoric of necessity’:⁷ our sense of wonder is reduced as apparently singular events become explicable as necessary parts of a mechanistic process; hence Lucretius’ frequent recourse to such formulations as *necesse est*.⁸ Seneca too records the ‘singular’ effects of the Campanian earthquake, including such marvels and peculiarities as a flock of hundreds of sheep killed in the vicinity of Pompeii (6.1.3, 27.1) and statues split apart (6.1.3, 30.1) — marvels that take their place in a rhetoric of *mirum*⁹ that is countered by Seneca’s voice of reason and necessity at e.g. 6.30.1 ‘Statuam diuisam non miror . . .’ and 6.16.3–4 ‘feri enim non potest ut non . . .; non est ergo dubium quin . . .; quod si uerum est, necesse est . . .’. The sole category of *mirum* that impresses Seneca is the intrinsic wonderment that rewards the philosophical study of nature herself: so at 6.4.2 ‘the study of this subject . . . is cultivated not for gain but for its marvellousness (*miraculo*)’.

A related technique that Seneca has in common with, and perhaps partly under the influence of, Lucretius may be termed the ‘domesticating’ use of analogy.¹⁰ So at 6.548–51, on earthquakes, the (Epicurean) theory that the earth’s trembling results from subterranean collapse is illustrated by analogy (i) with the trembling effect that passing wagons even of no great weight have on nearby buildings (548–9), or (ii) with the shaking effect when the wagons themselves are jolted by a stone in the road (550–1).¹¹ The wagon-comparison, for Bailey ‘probably traditional’,¹² recurs in Seneca at *N.Q.* 6.22.1, on the jolting (as opposed to tilting; cf. 6.21.2) subterranean movement that causes an earthquake: ‘si quando magna onera per uicos <ordine> uehiculorum plurium tracta sunt et rotae maiore nisu in salebras inciderunt, tecta concuti senties’.¹³ For Conte, ‘often the grandiose pathos that accompanies the description of frightening phenomena’ in Lucretius ‘is corrected by an exemplification belonging to a lower register, almost an attenuation of

⁵ On this ‘commonplace of philosophical thought’, C. Bailey (ed.), *Titii Lucreti Cari De Rerum Natura Libri Sex* (1947), 1651; on Lucr. 6.647–54, P. H. Schrijvers, ‘Le regard sur l’invisible: étude sur l’emploi de l’analogie dans l’oeuvre de Lucrèce’, in O. Gigon (ed.), *Lucrèce: huit exposés suivis de discussions*, Entretiens sur l’antiquité classique 24 (1978), 100; G. B. Conte, *Genres and Readers: Lucretius, Love Elegy, Pliny’s Encyclopedia* (Trans. G. W. Most) (1994), 152 n. 49.

⁶ Further, pp. 140–1 below. For the technique cf. *Ep.* 91, where a fire that has recently devastated Lyons is viewed in the context of equal and greater disasters, earthquakes among them (§§1, 9).

⁷ For these rhetorics, Conte, op. cit. (n. 5), 21. For earthquakes significantly recorded in the Roman tradition of prodigy-lists see G. Traina, ‘Terremoti e società romana: problemi di mentalità e uso delle informazioni’, *Annali della Scuola Normale Superiore di Pisa, Classe di Lettere e Filosofia* ser. III 15 (1985), 871–7, with De Vivo, op. cit. (n. 1), 93, 98–9, Guidoboni et al., op. cit. (n. 3), 17, 25–6, and H. M. Hine, ‘Seismology and vulcanology in antiquity?’, in C. J. Tuplin and T. E. Rihll (eds), *Science and Mathematics in Ancient Greek Culture* (2002), 64–5. Cf. also I. G. Kidd, *Posidonius. Volume II: the Commentary* (1988), 821 on Strab. 1.3.16 (= fr. 231 E–K) and his promotion of ‘ἀθυσμασία, because τὸ ἀήθες disturbs the senses and shows inexperience with τὰ φύσει συμβαίνοντα’ (a similar point at *N.Q.* 7.1.4).

⁸ e.g. 1.579; 2.243, 526; 3.798; 4.216 etc. So also *non est mirum* uel sim. at e.g. 4.768, 814; 5.192, 799; 6.130 etc.; *non mirandum*, e.g. 4.595, 858; 5.590; *non mirabile*, e.g. 2.308, 465; 4.256; 5.666. Further, Conte, op. cit. (n. 5), 21 and 151–2 n. 47.

⁹ cf. 6.3.4 ‘nihil horum [sc. eclipses, comets, etc.] sine timore miramur’; 6.4.1 ‘mille miracula mouet [sc. an earthquake]’.

¹⁰ On this phenomenon, Conte, op. cit. (n. 5), 152 n. 49; De Vivo, op. cit. (n. 1), 102 and n. 33; G. Williams, ‘Interactions: physics, morality, and narrative in Seneca, *Natural Questions* 1’, *CPh* 100 (2005), 158.

¹¹ For 550–1 so construed, Bailey, op. cit. (n. 5), 1637 and (further thoughts in his addenda) 1758.

¹² op. cit. (n. 5), 1637.

¹³ So Hine’s text, defended in his *Studies in the Text of Seneca’s Naturales Quaestiones* (1996), 106. *tecta/terram* MSS: if *tecta*, a closer tie to Lucretian (i) above (cf. 6.548–9 *tremescunt/tecta*); if *terram*, closer to (ii) above.

the sublime and its capacity to arouse *horror*'.¹⁴ After his initial description of an earthquake at 6.543–7, Lucretius thus 'feels the necessity of a counterpoint in *diminuendo* [e.g. the wagon-analogy]', so that '[i]t seems that his argumentative intention prevails over the emotional effects; the need to diminish the frightening phenomena makes the reasoning cool down in a comparison with banal and controllable experiences'.¹⁵

Seneca achieves a like effect, 'domesticating' earthquake by reducing the phenomenon to everyday proportions. But this 'domesticating' use of analogy has the further effect in the *Natural Questions* of relating different world-parts and operations within a unifying Stoic whole¹⁶ — an analogical technique that was, of course, hardly new, in that already among the Presocratics Empedocles for one 'had constantly kept in mind [via analogy] the unity of being, the totality of things as the solidarity of the elements, their subjection to simple principles, so that everything was also the image of something else'.¹⁷ For Conte, however, Lucretius' use of analogy modifies the Empedoclean model, in that for Lucretius analogy

is not so much a rhetorical scheme (metaphorical transposition) useful for displaying the elements' original affinity, as it was for Empedocles; rather, it is a cognitive principle integrated into a rational system. It lets us overcome the dividing line that separates us from the intelligible; it is the path that leads from the known to what is still unknown, from the visible to the invisible.

In Lucretius, in short, analogy is the structured form of thought that knows ...¹⁸

For present purposes the interest of Conte's remarks lies in the distinction that he draws between different possible modes of analogy — analogy not just as a descriptive instrument but as an incisive tool, or an experimental principle that gives the scientific eye licence to look intuitively through to the other side, seeing 'here' so as to infer and know 'there'. This difference between what might be characterized as the descriptive and inferential modes of analogy offers a helpful starting-point for the approach taken below to Seneca's scientific trajectory in *Natural Questions* 6 — a trajectory, I shall argue, that goes beyond the solid collection of different theories of what causes earthquakes to stage a highly creative form of intellectual journey towards progressively advanced levels of abstract speculation about nature's workings. As in the case of the spiritual journeys that Seneca stages elsewhere in his philosophical prose, proceeding from the mundane and earthly to the celestial, from the confining to the liberating,¹⁹ the effect of this journey is to shift our focus from an impressionistic engagement with the world of the here-and-now towards a more detached, cosmic and 'normalizing' viewpoint which is promoted more generally throughout the *Natural Questions*; the fearful sight of an earthquake's devastation thus provides a massive psychological jolt which finds alleviation in cosmic insight. Again, Seneca follows Lucretius in striving to banish fear of such phenomena as earthquakes by offering a rational explanation of their cause. But what crucially distinguishes Seneca's undertaking in *Natural Questions* 6, roughly this mid-point in the work as a whole,²⁰ is his promotion of a particular (Stoic) cosmic perspective that is unparalleled in the *De Rerum Natura*.

¹⁴ Conte, *op. cit.* (n. 5), 152 n. 49.

¹⁵ Conte, *op. cit.* (n. 5), 152 n. 49.

¹⁶ Further Williams, *op. cit.* (n. 10), 153–61.

¹⁷ Conte, *op. cit.* (n. 5), 12. Further, G. E. R. Lloyd, *Polarity and Analogy: Two Types of Argumentation in Early Greek Thought* (1966), 325–36 (esp. 325: 'by far the most important evidence for the use of analogy in Presocratic philosophy comes from Empedocles').

¹⁸ Conte, *op. cit.* (n. 5), 12–13.

¹⁹ cf. *Dial.* 6.17.2–18.8, 8.5.1–6, 12.6.2–8; *Ep.* 65.15–22, 79.12; *N.Q.* I *praef.* 1–17.

²⁰ If, that is, the persuasive case is accepted for an original book-order of 3 4a 4b 5 6 7 1 2. So C. Codoñer Merino (ed.), *L. Annaei Senecae Naturales Quaestiones*, 2 vols (1979), I, xii–xxi and 'La physique de Sénèque: ordonnance et structure des *Naturales Quaestiones*', *ANRW* II 36.3 (1989), 1792–4; Hine, *op. cit.* (n. 3, 1981), 4–23 and in the preface to his Teubner text (1996), xxii–xxv; and now Hine p. 43 and n. 3 in this volume.

II

Seneca's survey of earlier theories of earthquake²¹ is loosely structured as follows: at 6.5.1 opinion is said to be divided between water, fire, earth, and air or combinations of the four elements as the possible cause; 6.6–8: water as the cause; 6.9: fire; 6.10: earth; 6.11: fire again; 6.12–19: different theories of air as the cause; 6.20: all or multiple elements as the cause; 6.21.1: Seneca's preferred emphasis on a pneumatic explanation, given that there is nothing in nature (he insists) more powerful than air; 6.21.2–23.4: classification of the different ways in which the earth is moved (by shaking from below, by inclination, by trembling); 6.24–6: how air accumulates under the earth, its motion leading to earthquake. In his reporting of certain theories Seneca diverges from our other sources, attributing to Anaxagoras, for example, an explanation based on subterranean fire that is sparked by the violent collision of moving air and compacted clouds below ground (6.9.1), whereas Aristotle for one derives the Anaxagoran cause from air (αἰθήρ) that is entrapped in hollows beneath the earth and struggles for release (*Mete.* 2.7 365a 19–25). Efforts have been made in this particular case to reconcile Seneca's report with earlier versions,²² and it may be that he relies on a divergent doxographical source;²³ or does he massage his reporting here in a particular direction, reaching for fire as the Anaxagoran cause and returning briefly to *ignis* at 6.11 to achieve a full representation of, and rough balance between, the four elements in his overall survey? We shall soon return to the creative potentialities of his reporting, but the frequent lack of specific attributions²⁴ and the glaring imprecisions in his coverage of individual theories in 6.6–26 as a whole hardly suggest that his over-riding goal was to provide just a solid service-document of sorts, or an inventory of received opinions that was an end in itself. What matters more than finding the 'true' explanation, perhaps, is the spirit of enquiry into nature that Seneca promotes within us as he takes us further and deeper into the elaborate thought-experiment that his inventory cumulatively represents.

Of course, to the modern scientific eye so many of the theories reported by Seneca must seem hopelessly inadequate. But from an ancient perspective the very exercise of positing different natural explanations for earthquakes works to demystify and 'control' the phenomenon by subjecting it to experimental reason and locating it within a reassuring world-system. The *effort* to explain counts for so much: hence Seneca's indulgent attitude to the investigators of the past,²⁵ their main scientific contribution lying in their pioneering spirit (cf. 6.5.2 'plurimum ad inueniendum contulit qui sperauit posse reperiri'); and hence his coverage even of theories with which he disagrees, theories which nevertheless contribute to the collaborative historical effort from the Presocratics onwards that is represented and

²¹ In general, O. Gilbert, *Die meteorologischen Theorien des griechischen Altertums* (1907), 293–324; L. Chatelain, 'Théories d'auteurs anciens sur les tremblements de terre', *Mélanges d'archéologie et d'histoire de l'École française de Rome* 29 (1909), 87–101; *RE*² IV, 344–74; K. W. Ringshausen, *Poseidonios-Asklepiodot-Seneca und ihre Anschauungen über Erdbeben und Vulkane*, Diss. Munich (1929); M. Bollack, *La raison de Lucrèce: constitution d'une poétique philosophique avec un essai d'interprétation de la critique lucrétienne* (1978), 515–28; N. Gross, *Senecas Naturales Quaestiones: Komposition, naturphilosophische Aussagen und ihre Quellen* (1989), 248–70; Guidoboni *et al.*, op. cit. (n. 3), 42–7; Waldherr, op. cit. (n. 3), 47–220.

²² See A. Traglia, 'Il valore dossografico del *de terrae motu* di Seneca', in *Medioevo e Rinascimento: studi in onore di Bruno Nardi* (1955), 740–2, with W. K. C. Guthrie, *A History of Greek Philosophy II* (1965), 310–11; much depends on whether Aristotle's αἰθήρ is seen to correspond to Anaxagoras' term for fire, whence J. J. Hall, 'Seneca as a source for earlier thought (especially meteorology)', *CQ* 27 (1977), 428–9 ('Anaxagoras identified αἰθήρ with πῦρ so Seneca's account in part agrees with Aristotle's...'). Further on the difficulties of 6.9.1, Hine, op. cit. (n. 3), 1981, 237 on 2.12.3.

²³ cf. A. Setaioli, *Seneca e i greci: citazioni e traduzioni nelle opere filosofiche* (1988), 404.

²⁴ So e.g. 6.7.1 *Quidam* ... *imputauerunt*, 6.9.2 *alii*, 6.11 *Quidam*, etc.; further, Traglia, op. cit. (n. 22), 744, 750–1 = A. Traglia (ed.), *L. Anneo Seneca Trattato sui terremoti* (1965), 7, 10–11.

²⁵ So 6.5.3 'cum excusatione itaque ueteres audiendi sunt'. For 'rudis antiquitas' (4b.7.3) cf. 2.42.1, 3.14.1–2, 4a.2.24.

updated in 6.6–26.²⁶ In its relentless probing through the ages Seneca’s survey of theories thus inculcates ‘an attitude of mind that readily seeks a natural explanation’;²⁷ and he follows a roughly chronological path in progressing from Thales in the sixth century (6.6.1) to Anaxagoras, Anaximenes and Archelaus, Anaxagoras’ pupil, before turning (6.13.1–2) to Aristotle, Theophrastus and Straton of Lampsacus, head of the Peripatetic school after Theophrastus. Another (atomist) tradition is later traced in his coverage (6.19–20) of Democritus, Metrodorus of Chios, Democritus’ pupil (Metrodorus is in fact introduced at 6.19.1 before Democritus), and Epicurus; and then forward in time to Posidonius and Asclepiodotus, probably Posidonius’ pupil, in 6.21.2 and 22.2. And yet this chronological linearity is accompanied by a different form of progress in Seneca’s careful orchestration of his inventory: beyond the chronological considerations that influence his treatment, we shall see that Seneca builds into his coverage of different theories of earthquake a sub-plot of sorts that suggestively colours and conditions his often idiosyncratic portrayal of the *opinionones* he surveys — a sub-plot of movement from visual perception of the world to an increasingly theoretical and abstract mode of engagement with its workings. However speculative in its probings, this deeper form of engagement marks an attempt fully to ‘capture’ nature. Even if our exploratory efforts can be shown to be misguided, the mindset that looks beyond the visual and the particular to seek general underlying principles forms a breadth of viewpoint that steadies the shock of such fearsome but nevertheless *explicable* phenomena as the Campanian earthquake.

This general movement *ex oculis ad rationem* is initiated by Seneca’s treatment (6.6) of Thales’ early theory of water as the cause of earthquake. Seneca appropriately begins his inventory with what Thales held to be the first principle (ἀρχή).²⁸ Aristotle corroborates Seneca’s report (6.6.1) of Thales’ theory that the earth floats on water,²⁹ but he makes no mention of the further idea that ‘when the earth is said to “quake” it is tossed about by the movement of the water’ (*N.Q.* 3.14.1; cf. 6.6.2).³⁰ Seneca’s report of Thales’ earthquake-theory may be indirectly derived from Theophrastus;³¹ but whatever his source, and even if we allow for a certain quasi-doxographical zeal as he embarks on his inventory, why does he go to such lengths in 6.6 to report and refute a theory that he has already dismissed at 3.14.1–2 as ‘silly’ and ‘antiquated and unscholarly’? The theory is evidently false, he

²⁶ Seneca’s stance here may be compared to (and possibly influenced by?) Aristotle’s use of the so-called *endoxa* (‘reputable opinions’; on this translation, L. Taub, *Ancient Meteorology* (2003), 94 and 211 n. 98). For C. A. Freeland, ‘Scientific explanation and empirical data in Aristotle’s *Meteorology*’, in J. Annas (ed.), *Oxford Studies in Ancient Philosophy* VIII (1990), 78–9, Aristotle’s refutation of *endoxa* not only gives him ‘a kind of rhetorical advantage’ as he presents and dismisses his predecessors’ efforts, but it also serves two other related purposes: (i) the technique might ‘indicate a special way in which Aristotle sees science as a sort of cumulative group endeavour’, with possible advantage and insight to be gained from seeing where an existing theory fails; and (ii) his ‘surveys of *endoxa* reflect a picture of science as a problem-solving activity’, with significant questions raised and framed by the theories he reviews/rejects. Both purposes might equally be discerned in Seneca’s use of past theories *throughout* the *Natural Questions*. But see now for (other) distinctive features in Seneca’s use of critical doxography Hine pp. 56–8 in this volume, with pp. 58–9 on ‘the virtual academy’ that Seneca establishes in constructing ‘a community of scholars that stretches across the centuries’, past and future.

²⁷ R. K. French, *Ancient Natural History: Histories of Nature* (1994), 160, of Lucretius, but equally true of Seneca (cf. 172 ‘The similarity to Lucretius is striking’).

²⁸ D–K 11 A 12 = G. S. Kirk, J. E. Raven and M. Schofield, *The Presocratic Philosophers* (2nd edn, 1983), 88–9 fr. 85; ἀρχή in the Aristotelian sense of (Kirk *et al.*, 90) ‘the original constituent material of things, which persists as a substratum and into which they will perish’.

²⁹ D–K 11 A 12, 14. Given the possibility that Thales left few if any written works (further Kirk *et al.*, op. cit. (n. 28), 86–8), Seneca’s quotation (6.6.1 “hac” inquit “unda ...”) naturally invites suspicion as a Senecan fabrication, or at least as derived from an intermediary doxographical source (D. Vottero (ed.), *Questioni Naturali di Lucio Anneo Seneca* (1989), 404 n. 2 on 3.13.1).

³⁰ cf. Hall, op. cit. (n. 22), 433–5, concluding (435) that it is ‘unlikely that Seneca has invented the earthquake theory ...; he probably found it in his source’, but ‘the chances are against its being genuinely Thales’ theory’ (so H. Diels, *Doxographi Graeci* (4th edn, 1965), 225).

³¹ So Kirk *et al.*, op. cit. (n. 28), 92–3; Lloyd, op. cit. (n. 17), 308 n. 2.

asserts at 6.6.3, because if the earth floated on water there would always be earthquakes and the whole earth would be shaken, not just a part of it; and at 6.6.4 he easily parries a further argument made in support of Thales' theory, namely that outbreaks of water often accompany earthquakes. Aristotle himself raised obvious objections to the theory that the earth floats on water,³² but Lloyd emphasizes the considerations that may nevertheless have prompted, and reflect positively upon, Thales' efforts. In contrast to 'previous conceptions of the physical connection between different world-masses' (e.g. the Hesiodic myth of Atlas supporting the heavens at *Theog.* 517–20),

Thales' idea ... is a rational account, a λόγος, first in that it omits any reference to anthropomorphic gods or the supernatural, and secondly in that it is based on a certain positive analogy between the effect to be explained (why the earth is 'held up') and an effect that is observed elsewhere (solid objects being 'held up' when they float).³³

Seneca too acknowledges a positive side in prefacing his inventory in *Natural Questions* 6 with a moderate judgement on his scientific predecessors, praising them for their investigative instinct (cf. 6.5.2 'magni animi res fuit rerum naturae latebras dimouere ...') even if he rejects their ideas. On this approach to the scientific past, his extended treatment of Thales in 6.6 may constitute an initial, and exemplary, illustration of the *ueteres* in action as keen but 'primitive' (cf. 3.14.2 *rudem*, 6.5.2) investigators. But the ease with which he counters Thales' theory also exposes the fragility of the relatively uncomplicated, descriptive mode of analogy that is sampled and tested here, whereby A and B are straightforwardly related, with no acknowledgement made or account given of the stark differences between the two: "hac" inquit "unda sustinetur orbis uelut aliquod grande nauigium et graue his aquis quas premit" (6.6.1). It is from this beginning that our Senecan ascent into 'higher' modes of scientific conjecture and reasoning begins.

In contrast to the descriptive mode of analogy on offer in 6.6, what I have termed the inferential mode first takes shape in Seneca's coverage (6.7) of theories that attribute earthquakes to the movement of subterranean water. If we think in terms of a hierarchical ascent from sensory to cognitive levels of awareness, this inferential mode occupies a middle place in positing the invisible from the visible, the plausible from the evident. So at 6.7.1, in the voice of an interlocutor,³⁴ 'per [= throughout the surface-extent of] omnem ... terram multa aquarum genera decurrunt ...'; then we go underground in 6.7.3 'omnis aquarum et intra terram natura faciesque est', where 'reasonable' inference licenses the transition from above to below: 'non est diu probandum ibi multas aquas esse ubi omnes sunt: neque enim sufficeret tellus ad tot flumina edenda, nisi ex reposito multoque funderet'. Of course, theories of subterranean water extended back to the Presocratics,³⁵ a tradition on which Seneca draws at *N.Q.* 3.8–9 and also at 5.14.2, where his justification of the subterranean theory may appear rather more facile than convincing in its excessively neat, chiasmic formulation: 'nam ne haec quidem [sc. clouds and mist, which Seneca locates below as well as above ground] supra terras quia uidentur sunt, sed quia sunt uidentur: illic quoque nihilo ob id minus sunt quod non uidentur'.³⁶ In contrast to 3.8–9 and 5.14.2,

³² See Lloyd, *op. cit.* (n. 17), 307.

³³ Lloyd, *op. cit.* (n. 17), 308.

³⁴ In his Teubner text (1996), Hine assigns the whole of 6.7.1 *per omnem* — 7.6 ... *superstantium* to an interlocutor, a decision queried by B. Inwood, 'God and human knowledge in Seneca's *Natural Questions*', in D. Frede and A. Laks (eds), *Traditions of Theology: Studies in Hellenistic Theology, its Background and Aftermath* (2002), 140 n. 44, perhaps rightly: given the weight that will be attached below to Seneca's inferential/analogical procedures in 6.7.5 in particular, it arguably matters that the interlocutor falls silent (at the end of 6.7.4 at the latest?) before Seneca's master-voice resumes.

³⁵ So Anaxagoras, D–K 59 A 42 §5, Democritus 68 A 97–8 (98 = *N.Q.* 6.20); further P. Parroni (ed.), *Seneca: ricerche sulla natura* (2002), 534 on 3.8.1.

³⁶ cf. also 3.16.4–5 'sunt et sub terra minus nota nobis iura naturae, sed non minus certa. crede infra quidquid uidet supra. sunt ... illic specus uasti ... haec [sc. spatia] spiritu plena sunt ... , <sunt> et stagna obsessa tenebris et lacus ampli', after Lucr. 6.536–42 (on earthquakes).

however, Seneca's emphasis at 6.7.5 on the limits of human vision and our failure to engage the mind's eye amounts to a strong justification of the inferential mode itself:

Iam uero nimis oculis permittit, nec ultra illos scit producere animum, qui non credit esse in abdito terrae sinus maris uasti. nec enim uideo quid prohibeat aut obstat, quominus habeat [sc. terra]³⁷ aliquod etiam in abdito litus et per occultos aditus receptum mare ...

The inferential method on display here is bolstered by the hard-driving rhetorics of 'what is there to prevent ...?' and 'how (vel sim.) unless ...?';³⁸ and the rhetoric of necessity also contributes at 6.8.5 'habeant [sc. the earth's interior parts] enim oportet ... pluribus locis sparsum umorem ...'. But Seneca rounds out this demonstration of analogical inference in action (what is above the earth also exists below ...) with a climactic display in 6.8 of the limitations of visual investigation, the inevitability of inferential speculation.

What is the source of rivers if not the wetness inside the earth (6.8.1)? Seneca first appeals to the visual evidence of two famous cases in point (6.8.2 'cum uides interruptum Tigrim ...; cum uides Alpheon ...')³⁹ before turning to the Nile at 6.8.3: among the theories that explain the Nile's summer-flooding, he reports, is that the river takes its volume *e terra* and *ex intimo*. Implicated here are presumably the theories of Oenopides of Chios and Diogenes of Apollonia, both of which are found to be flawed at *N.Q.* 4a.2.26–30. But whatever the detailed and disputed inner workings of the earth that produce the Nile's summer-flood, at 6.8.3–4 Seneca strives to 'prove' that the Nile has a subterranean origin by citing the testimony of two centurions who were reportedly sent by Nero to investigate the river's source. Since the elder Pliny also mentions a Neronian mission to Ethiopia and the upper Nile (*Nat.* 6.181, 184–6), a lively controversy has arisen as to whether Seneca and Pliny both refer to the same mission, and if so (in 61 C.E., or later?),⁴⁰ how Seneca's stress on the scientific motivation for the expedition and on Nero's high-minded commitment to 'the truth' (cf. 6.8.3 'ut aliarum uirtutum ita ueritatis in primis amantissimus') is to be reconciled with the military emphasis in Pliny (cf. *Nat.* 6.181 'Neroni ... inter reliqua bella et Aethiopicum cogitanti').⁴¹ But even if the two reports do indeed refer to the same mission, Seneca would seem to follow his own agenda in the colourful way in which he describes the limits of the adventurers' investigations (6.8.3–4):

ego quidem centuriones duos ... audiui narrantes longum ipsos iter peregisse, cum a rege Aethiopiae instructi auxilio commendatique proximis regibus ad ulteriora penetrassent. qui 'inde' aiebant 'peruenimus ad immensas paludes, quarum exitum nec incolae nouerant nec sperare quisquam potest: ita implicatae aquis herbae sunt et <herbis> aquae, nec pediti eluctabiles nec nauigio, quod nisi paruum et unius capax limosa et obsita palus non fert. ibi' inquit 'uidimus duas petras, ex quibus ingens uis fluminis excidebat'.

³⁷ See Hine, op. cit. (n. 13), 98.

³⁸ For 'what prevents ...?', cf. 6.7.6 'quas [sc. undas] quid uetat illic fluctuare ...?'; for 'how unless ...?', 6.7.3 'neque enim sufficeret tellus, ... nisi', 6.8.1 'unde enim ista prorepunt ..., nisi ...?', 6.8.2 'quo illum [sc. the Tigris] putas abire nisi in obscura terrarum ...?'

³⁹ For the 'disappearing' Tigris and Alpheus, 3.26.4–5 with Vottero, op. cit. (n. 29), 438 nn. 10, 11 for sources; Seneca again strives to demystify *mira* by tracing such rivers to an underground source (for especially the legend of Alpheus and Arethusa implicated in the paradoxographical tradition, Vottero, 438–9 n. 12).

⁴⁰ See M. De Nardis, 'Seneca, Plinio e la spedizione neroniana in Etiopia', *Aegyptus* 69 (1989), 125–6 for a survey of opinion on two expeditions (125 n. 11) as opposed to one (126 n. 12; so De Nardis, 129). Date: 61 C.E., I. Lana in discussion (342) after O. Gigon, 'Senecas *Naturales Quaestiones*', in P. Grimal (ed.), *Sénèque et la prose latine: Neuf exposés suivis de discussions*, Entretiens sur l'antiquité classique 36 (1991), 313–39; cf. J. Desanges, 'Les relations de l'Empire romain avec l'Afrique nilotique et érythréenne, d'Auguste à Probus', *ANRW II* 10.1 (1988), 17 (one expedition between 61 and 63 C.E.) with A. De Vivo, 'Nerone e la ricerca delle fonti del Nilo (Sen. *Nat.* VI 8, 3–5)', in his *Costruire la memoria. Ricerche sugli storici latini* (1998), 168–70 for a similar flexibility and overview of the question.

⁴¹ See B. M. Gauly, *Senecas Naturales Quaestiones: Naturphilosophie für die römische Kaiserzeit*, *Zetemata* 122 (2004), 198–9 and n. 37 for the main issues and bibliography, and now Hine pp. 63–4 in this volume (with p. 64 and n. 90 on implied criticism of Nero here and elsewhere in the *Natural Questions*).

The intrusiveness of this anecdote within the ‘scientific’ context that it interrupts⁴² is underscored by the tonal shift that occurs when Seneca reverts to direct quotation and to a stylistic mode that is colloquial in feel and diction.⁴³ By allowing the centurions to speak in their apparently unadorned voice Seneca may enhance the credibility of his account, even though there are distinct signs of careful construction here. Describing the many different kinds of surface-water on the earth at 6.7.1, Seneca includes among them ‘the very wide lakes and inland waters surrounded by peoples who are unknown to each other, and swamps a boat cannot get through (*ineluctabiles nauigio paludes*), and impassable even by those who live by them’ (6.7.2). Our centurions conveniently confirm as much in their report of ‘*aquae nec pediti eluctabiles nec nauigio*’,⁴⁴ while the sequence of negatives and the points of linguistic strangeness in their account⁴⁵ as well as the lack of any clear direction-markers all contribute to the unsettling atmosphere of this lost place.⁴⁶ The Nile is traced back to two rocks, perhaps the so-called ‘Veins of the Nile’ at 4a.2.7,⁴⁷ from which its great force of water descends from an unseen source (‘*ibi . . . excidebat*’). The anecdote takes us literally to the very limits of world-investigation *per oculos*, limits that leave room for doubt and uncertainty (6.8.5 ‘*sed siue caput illa [sc. uis fluminis] siue accessio Nili est . . .*’), inference the only way ahead: ‘*nonne tu credis illam [sc. uim fluminis], quidquid est, ex magno terrarum lacu ascendere?*’ (6.8.5). In effect, the anecdote is no colourful aside here but fully integrated into Seneca’s continuing argument, offering from a different angle a crowning illustration of the need ‘to project the mind beyond the eyes’ (cf. 6.7.5).

III

The inferential technique championed at length in 6.7–8 is immediately reapplied without fanfare in Seneca’s treatment of Anaxagoras’ fire-theory at 6.9.1:

Anaxagoras . . . existimat simili paene ex causa et aëra concuti et terram: cum <in> inferiore parte⁴⁸ spiritus crassum aëra et in nubes coactum eadem ui qua apud nos quoque nubila frangi solent rumpit, et ignis ex hoc conlisu nubium cursuque elisi aëris emicuit, hic ipse in obuia incurrit exitum quaerens, ac diuellit repugnantia . . .

Seneca’s report of Anaxagoras’ theory may or may not be accurate,⁴⁹ but inference now serves as an accepted foundation of argument, our licence to ‘project the mind beyond the eyes’ (6.7.5) firmly established and hence variously applied in the chapters that follow. So in Seneca’s report at 6.9.2–3 of a different fire-theory, that earthquakes are caused by subterranean erosion, our experience above ground ‘confirms’ what happens below:

alii in igne quidem causam esse, sed non ob hoc [sc. Anaxagoras’ theory] iudicant, sed quia pluribus obrutus locis ardeat et proxima quaeque consumat . . . *hoc apud nos quoque uidemus accidere* quotiens incendio laborat pars ciuitatis. cum exustae trabes sunt . . ., tunc diu agitata fastigia concidunt . . .

⁴² On this ‘elemento digressivo e trasgressivo’, De Vivo, op. cit. (n. 40), 170.

⁴³ De Vivo, op. cit. (n. 40), 172 for analysis; cf. A. Setaioli, ‘Elementi di *sermo cotidianus* nella lingua di Seneca prosatore’, *SIFC* 52 (1980), 9–10 n. 6 on the non-literary character of *petras*.

⁴⁴ On the parallel with 6.7.2, De Nardis, op. cit. (n. 40), 134.

⁴⁵ Notably *eluctabilis* unprecedented, the absolute use of *obsita* without an accompanying ablative ‘abbastanza audace e semanticamente difficile’ (De Vivo, op. cit. (n. 40), 173–4).

⁴⁶ So De Vivo, op. cit. (n. 40), 173 on ‘il senso dell’ignoto, dell’assenza di ogni limite’; cf. also 174 ‘La *nouitas* linguistica è elemento non secondario a definire questa semantica dell’ignoto’.

⁴⁷ So e.g. P. Oltramare (ed.), *Sénèque, Questions Naturelles* (1929), 262 n. 1.

⁴⁸ For clarification of the meaning (‘au-dessous de la terre’, i.e. beneath as opposed to inside the earth, which is supported by air), Bollack, op. cit. (n. 21), 525 n. 1.

⁴⁹ See p. 128 above and n. 22.

The mind's eye now begins to move easily between the visible and the invisible. Seneca's report of Anaximenes' theory of earth as the cause of earthquake, its natural ageing leading to eventual collapse,⁵⁰ is illustrated by the example of buildings succumbing because of age,⁵¹ the falling sections of earth rebounding 'like a ball' (6.10.1). These illustrations again serve to 'domesticate' the phenomenon, a technique reapplied in Seneca's appeal in 6.11.1 to a homely analogy to support a further fire-theory, that an earthquake is caused by the pressure resulting from fire heating and vaporizing enclosed water underground:⁵² 'uidemus aquam spumare igne subiecto. quod in hac aqua facit inclusa et angusta, multo magis illum [sc. ignem] facere credamus cum uiolentus ac uastus ingentes aquas excitat'. If we now look back on Conte's characterization of Empedoclean analogy as a unifying instrument, 'a rhetorical scheme (metaphorical transposition)⁵³ which grasps the totality of being, the Senecan inferential process at work in these examples in 6.9–11 and often elsewhere in the *Natural Questions* is itself a unifying mechanism, emphasizing and promoting similarity and continuity between separate orders.⁵⁴ But the 'cognitive principle' that Conte detects in Lucretian analogy, that 'path that leads from the known to what is still unknown, from the visible to the invisible',⁵⁵ also recurs in Seneca, whose mode of inferential analogy goes beyond the descriptive and unifying Empedoclean function to form a penetrating cognitive principle of its own. The Senecan mode, that is, is not limited to 'intuitive leaps' of an Empedoclean kind but constitutes 'a logical procedure' in the Lucretian manner, a 'structured form of thought that knows';⁵⁶ Seneca makes 'true' connections.

The integrated world-view shaped by these connections provides the enlarged perspective that promises in 6.3 to alleviate our fear of earthquakes. Unusual phenomena, Seneca announces, are unusually disturbing because we rely on our eyes, not reason (6.3.2). Accordingly, as Seneca's inventory of causes gains momentum after 6.7, its roughly chronological sequence from the Presocratics onwards is matched by a movement first to analogical inference and then towards more abstract speculation, the mind's eye increasingly our sole guide. The first of three samples of this movement in an abstract direction occurs in Seneca's report in 6.12 of the theory of Archelaus, Anaxagoras' pupil and Socrates' teacher.⁵⁷ His theory that earthquakes are caused by air penetrating the earth from outside and then being compressed and pushed into movement by air that presses in on top of it (6.12.1–2 = DK 60 A 16a)⁵⁸ finds empirical support in the observation that the

⁵⁰ 6.10.1. Cf. Aristot., *Mete.* 2.7 365b 6–12 = D–K 13 A 21 with W. K. C. Guthrie, *A History of Greek Philosophy I* (1962), 139 n. 1 (overlap with Anaximander?). Seneca apparently offers (Traglia, op. cit. (n. 22), 743) 'un allargamento del pensiero di Anassimene', perhaps following a source that diverges from the Aristotelian and other evidence in D–K above (cf. Setaioli, op. cit. (n. 23), 405). Cf. Hall, op. cit. (n. 22), 429: the section down to 6.10.1 *ignis exederit* 'is recognizable as a version of the theory given by Aristotle and Aetius. The rest may conceivably be an alternative theory of Anaximenes', ignored by Aristotle; but much more likely it is another example of Seneca's habit of drifting away from the author he has started to paraphrase' (hence a significant qualification in n. 51 below).

⁵¹ 6.10.2. For Guidoboni *et al.*, op. cit. (n. 3), 43, seemingly *Anaximenes'* original choice of comparison, but for Senecan interference cf. n. 50 above. The point matters because of my own emphasis on Seneca's artful structuring of, and full control over, every aspect of his inventory in *Natural Questions* 6 as a whole.

⁵² Attribution of the theory is uncertain, but for Empedocles tentatively discussed in relation to 6.11.1 *Quidam* (cf. 3.24.1–3), see Vottero, op. cit. (n. 29), 608 n. 1 after Ringshausen, op. cit. (n. 21), 38.

⁵³ Conte, op. cit. (n. 5), 12; cf. my p. 127 above.

⁵⁴ For the approach cf. Williams, op. cit. (n. 10), 159–61.

⁵⁵ op. cit. (n. 5), 12–13.

⁵⁶ To adapt the phrasing of Conte, op. cit. (n. 5), 12–13.

⁵⁷ cf. p. 129, and see Guthrie, op. cit. (n. 22), 339; it is unfortunate that Seneca's own characterization at 6.12.1 'Archelaus †antiquitatis† diligens' is beyond recovery (further, Hine, op. cit. (n. 13), 99).

⁵⁸ The theory, unattested before Seneca, is ascribed by Ammian. 17.7.11 to Anaxagoras — itself perhaps a reflection and consequence of the latter's close association with Archelaus. For parallels between 6.12.3 (a qualification to Archelaus' theory) and Aristot., *Mete.* 2.8 366a 5–12 see Traglia, op. cit. (n. 22), 747; given Seneca's subsequent reversion (6.13.1) to Aristotle's theory, he arguably relies on a doxographical source that itself groups Archelaus and Aristotle in a similar fashion (cf. Setaioli, op. cit. (n. 23), 406–7).

atmosphere tends to be calm just before an earthquake,⁵⁹ when the 'force of air' that normally generates wind is instead located under the earth. In contrast to the inferential process that has predominated thus far in the Senecan inventory, however, positing an analogical relationship between the visible and the invisible, Archelaus' approach as portrayed by Seneca is more liberated in its subterranean probings, the mind's eye reconstructing events below with only a tangential relation to events above ground (the prevailing calm before an earthquake).

Secondly, Seneca's version (6.13.1) of Aristotle's and Theophrastus' theory of earthquakes⁶⁰ amounts to 'merely a rough paraphrase'⁶¹ of Aristotle's fuller account, with Seneca taking up Aristotle's derivation of the cause from the latter's familiar theory of exhalations (hot and dry or cold and moist) from the earth.⁶² In terms of scientific method, however, Seneca extrapolates the Aristotelian cause from a postulate, the exhalation-theory, that owes nothing to visual analogy. Third, Straton of Lampsacus, Theophrastus' successor as head of the Peripatetic school, derives earthquakes from the mutual exclusiveness and repulsion of heat and cold (6.13.2) and from the resulting cycles of conflict (6.13.6 'uices ... pugnae') between hot and cold air underground.⁶³ This theory presumably constitutes a Peripatetic development of the Aristotelian notion of *antiperistasis*, or the mutual reaction of hot and cold to each other.⁶⁴ It apparently finds empirical support in the observation that in winter wells and caves are warm because heat gathers there in retreat from the cold above, while in the summer cold retreats.⁶⁵ Again, however, the theory itself is based on an a priori principle (hot and cold in conflict), and it accordingly takes us further in a cognitive direction *ex oculis ad rationem* within Seneca's broad inventory; but at this point an additional development introduces another important dimension to the inventory.

IV

Another method by which Seneca moves to 'normalize' earthquakes is to draw on the familiar conception in the ancient scientific tradition of the cosmos as a living organism.⁶⁶ So, for example, Aristotle compares earthquakes with the tremors and throbbings of the human body, the effects in both cases caused by the pent-up force of *pneuma* as either breath or wind (*Mete.* 2.8 366b 14-22).⁶⁷ Lucretius similarly compares the dispersal of

⁵⁹ So also Aristot., *Mete.* 2.8 366a 5-6; Plin., *Nat.* 2.192; Ammian. 17.7.11.

⁶⁰ Aristot., *Mete.* 2.8 365b 21-369a 9; Theophr. 195 Fortenbaugh (nothing remains of Theophrastus' report, which possibly figured in his *Meteorologica*; Vottero, op. cit. (n. 29), 610 n. 2). Further on both, Gilbert, op. cit. (n. 21), 305-12; Guidoboni *et. al.*, op. cit. (n. 3), 44; Waldherr, op. cit. (n. 3), 49-59.

⁶¹ Hall, op. cit. (n. 22), 413 (and n. 2: insufficient evidence 'to show how accurately Seneca is reporting Theophrastus').

⁶² The exact role of the Aristotelian exhalations in Seneca's formulation is problematic, but for the issues well clarified see Hall, op. cit. (n. 22), 413 n. 4: 'Seneca does not state clearly *which* exhalation is cause; but nor, in this chapter [*Mete.* 2.8], does Aristotle. Theoretically, dry exhalation causes wind (360b 10ff. etc.), which causes earthquakes (366a 3f. etc.); but in 2.8 moisture is also involved in producing the exhalation to which earthquakes are due (365b 24-7, 366b 9f)'.

⁶³ Fr. 89 Wehrli. As in the case of Archelaus in 6.12, Seneca is our sole authority for Straton's theory, whence for Setaioli, op. cit. (n. 23), 408 confirmation that 'la derivazione non è dalla tradizione dossografica, ma dalla fonte principale del nostro libro, per noi perduta'.

⁶⁴ See H. D. P. Lee (ed.), *Aristotle: Meteorologica* (1952), 82 n. b on 1.12 348b 2-3 with Gilbert, op. cit. (n. 21), 196; cf. *N.Q.* 2.7.2 with Hine, op. cit. (n. 3, 1981), 193-5 for (Stoic) *circumstantia* = ἀντιπερίστασις of a different sort.

⁶⁵ Something of a commonplace in the ancient scientific tradition; cf. *N.Q.* 4a.2.26 (of Oenopides of Chios), Aristot., *Mete.* 1.12 348b 2-5 with Vottero, op. cit. (n. 29), 611 n. 6.

⁶⁶ See Lloyd, op. cit. (n. 17), 232-72; Hine, op. cit. (n. 3, 1981), 141-2 on 2.1.4 (for the Stoics, the earth of course a living being); Vottero, op. cit. (n. 29), 406 n. 3 on 3.15.1.

⁶⁷ See Gilbert, op. cit. (n. 21), 308; Lloyd, op. cit. (n. 17), 362.

earthquake-inducing wind under the earth to the effects of cold on the body (6.592–5); the broader Lucretian influence on *Natural Questions* 6 may extend to Seneca's similar use of the body-analogy as a way of 'domesticating' earthquake.⁶⁸ The comparison recurs with a notable frequency throughout the book,⁶⁹ but it comes into its own after Seneca has led us through the progressive stages, described in II and III above, of our inferential journey *ex oculis ad rationem*. So it is applied with impressive elaboration at 6.14.1–2, where Seneca attributes to an unnamed constituency (6.14.1 'Sunt qui existiment') that presumably embraces the Stoics⁷⁰ the view that air and water function within the earth as blood and air within a healthy body. Any disruption to the regular flow of these properties in the earth or body leads to equivalent kinds of tremor: hence earthquake at 6.14.3–4. The analogy is not without weakness here,⁷¹ but it nevertheless contributes to a familiar refrain in *Natural Questions* 6 that consolidates the comparison through sheer force of repetition. Moreover, the (Stoic) theory of 'vital air' that Seneca accepts as the cause of earthquakes in 6.16.1–18.1 is naturally at home in a living cosmos.⁷² In readiness for this critical development in 6.16–18, and as a related aspect of the earth-as-body analogy, we shall see that the air already begins to show signs of life in Seneca's animating description of it earlier in his inventory.

Given the dramatic capabilities on display in Seneca's more heightened narrative moments in the *Natural Questions* and elsewhere in his prose corpus, and most obviously in his tragedies, we should hardly be surprised by his explosive portrayals of the forces that lead to earthquakes in *Natural Questions* 6. So at 6.9.1 fire rages as if with animate force ('hic ipse in obuia incurrit exitum quaerens,⁷³ ac diuellit repugnantia ...'), while at 6.12.1–2 Seneca's account of Archelaus' theory (in Archelaus' quoted voice) is notable for the poetic colouring that gives the compressed air that rages below ground a distinctive literary personality:

uenti in concaua terrarum deferuntur. deinde, ubi omnia spatia iam plena sunt, et in quantum potuit aër densatus est, is qui superuenit spiritus priorem premit et elidit, ac frequentibus plagis primum cogit, deinde proturbat; tum ille quaerens locum omnes angustias dimouet, et claustra sua conatur effringere. sic euenit ut terrae spiritu luctante et fugam quaerente moueantur ...

Beyond the enlivening use of poetic language here,⁷⁴ such terms as *quaerens*, *conatur*, and *luctante* of the wind contribute to a personifying trend that is still more explicit at 6.13.3–5 (Straton's theory, hot and cold in mutual reaction to each other):

⁶⁸ See Williams, op. cit. (n. 10), 158 with Schrijvers, op. cit. (n. 5), 100–1 on Lucretius: 'Les comparaisons établies entre les phénomènes grandioses du cosmos et le corps humain d'une étendue minuscule ont pour conséquence psychologique que, grâce à ces parallèles, le caractère miraculeux et effrayant des *paradoxa* du monde est amoindri'.

⁶⁹ cf. 6.3.1, 10.2, 14.1–2, 18.6, 24.4; more generally, e.g. 3.15.1–2, 5, 16.2, 5.4.2 with Taub, op. cit. (n. 26), 143, 147, 151–2.

⁷⁰ Vottero, op. cit. (n. 29), 613 n. 1 for bibliography.

⁷¹ If the analogy is pressed too closely, how to account for the fact that an earthquake is localized, the body's trembling total? See further p. 140 below, and cf. Lloyd, op. cit. (n. 17), 362 on Aristot., *Mete.* 2.8 366b 14–22 (one of Aristotle's 'less happy' analogies).

⁷² On the Stoic emphasis: Gilbert, op. cit. (n. 21), 320 n. 1; Traglia, op. cit. (n. 22), 749; Vottero, op. cit. (n. 29), 616 n. 1.

⁷³ For *quaero* of natural forces, cf. 6.12.2 with *OLD* 1a, including Lucretius 5.519–20 'aetheris aestus/ quaerentes ... uiam'.

⁷⁴ So *concauus* of rocks, caves etc. (cf. 6.20.1), Cic., *N.D.* 2.98 but then predominantly poetic (*TLL* IV, 6.22–32); *denso* of air etc., Livian and then found in Seneca, Columella, and the elder Pliny but otherwise in verse (*TLL* V.1, 544.50–69); *elido* of natural phenomena, poetic and in Senecan prose and the elder Pliny (examples applied to μετέωρα, *terrena*, and *liquida* at *TLL* V.2, 371.17–40); *proturbo* of inanimate things, only verse examples at *OLD* 1a; *quaero* of natural forces, apparently not before Lucretius 5.520 (cf. n. 73 above); *claustra* of winds in verse (*TLL* III, 1320.74–80); *luctor* of air/wind is Senecan after Virg., *Aen.* 1.53 (*TLL* VII.2, 1733.9–20), as is *fuga* (cf. *Georg.* 3.201; *Aen.* 1.137; *TLL* VI.1, 1467.77–81).

In quoting *Aen.* 1.53–4 here Seneca significantly modifies the mood and subject of the verbs *premo* and *freno* in the original, replacing Virgil's 'Aeolus ... premit ac ... frenat' with 'nihil erit quod ... premat ac ... frenet' and countering poetic fiction with the sober, scientific 'reality'.⁸³ A rather contrived and indulgent assertion of his scientific rigour, perhaps; but in 'correcting' Virgil here, he nevertheless sustains his broader effort in 6.16–18 to bring the air fully to life, giving the wind a spiritedness that even Aeolus is powerless to control.

This Virgilian presence contributes significantly in 6.16–18 as a whole to Seneca's elaboration of the (Stoic) theory of air as a vital, and notably vitalized, unifying principle at both the micro- and macrocosmic levels. At 6.16.1 the air gives unity and coherence to individual world-parts through the tension that 'holds things together, from the whole world down to the smallest object in it';⁸⁴ and it also has a universal nourishing function at 6.16.1 'illo [sc. spiritu] ... uitali et uegeto et alente omnia', the subterranean air nurturing trees and plants (cf. Cic., *N.D.* 2.83) even as the earth's exhalations provide nourishment (6.16.2 *alimentum, pastus*) for the heavenly bodies in the firmament as a whole (6.16.2 'totum hoc caelum').⁸⁵ Seneca steers his specific argument here, that 'it is obvious that the earth is not without air' (6.16.1), in this universal direction to convey the enormity of the amount of air that the earth must be able to generate and store within itself (6.16.3), so fortifying his conclusion in 6.16.4 that 'a great quantity of air lies inside the earth', and that earthquakes are prevalent because of the air's restlessness underground. But beyond his localized argument, his elaborations on air as a universal connector also support the 'one-world' view that is promoted more generally in the *Natural Questions*. Our arrival at this 'whole' perspective is the culmination-point of our progress through stages of increasingly abstract argument that detach us from the visual shock and apparent inexplicability ('Why here? Why now? Why us?') of the Campanian disaster; for by colourfully bringing air to life⁸⁶ and by stressing its unifying pervasiveness, Seneca diverts our focus from the particular earthquake to the vast living system of which it is but a functional part and natural side-effect. In this general enlargement-process the world/body analogy equally contributes to our unifying as well as demystifying vision of nature, bringing her to life as something that can be grasped as a whole and fully understood in relation to human experience: her rhythms and occasional happenings (e.g. earthquakes) are now rationalized within a familiar cosmic-bodily construct. Hence the neat closural effect when he revisits the body-analogy at 6.18.6, as if he rounds out with a form of ring-composition a sequence of argument — air as the cause of earthquakes — that begins in 6.14.1 with his first elaborate development of the body-comparison in the book.

As part of Seneca's strategy of indulgently reporting even those early theories of earthquake of which he disapproves (6.19.1 'non ... permitto mihi ne eas quidem opiniones praeterire quas improbo ...'), and perhaps implicitly as a measure of the broader Lucretian influence on *Natural Questions* 6, he advances his inventory in 6.19–20 by turning to the atomist tradition and the theories of Metrodorus of Chios (6.19),⁸⁷ Democritus (6.20.1–4), and Epicurus (6.20.5–7). And yet his emphasis on air as a universal

⁸³ See De Vivo, op. cit. (n. 1), 64.

⁸⁴ F. H. Sandbach, *The Stoics* (2nd edn, 1989), 76; cf. Seneca's 'illo [sc. spiritu] quo se tenet [sc. terra] ac partes sui iungit, qui inest etiam saxis mortuisque corporibus' at 6.16.1. On the difficulty of fixing the Senecan/Stoic meaning of *spiritus* here and elsewhere in the *Natural Questions* (plain air, wind, or Stoic *pneuma*?) see Hine, op. cit. (n. 3, 1981), 137–9 on 2.1.3.

⁸⁵ cf. for this holistic vision Seneca's portrayal of *aër* (whether atmosphere or plain air) as both part and sustaining material of the universe at 2.3.1, joining and mediating between the different cosmic parts at 2.4.1; and also the earth as universal *pars* and *materia* (cf. 6.16.2–3) at 2.5.1 with Hine, op. cit. (n. 3, 1981), 179 for further parallels in the *Natural Questions*.

⁸⁶ Culminating in 6.16 in the personifying touch at the end of §4 'nihil ... tam inquietum quam aër, tam uersabile et agitatione gaudens' (*gaudeo* 'poet., of things', *OLD* 2; further, De Vivo, op. cit. (n. 1), 57).

⁸⁷ Despite his priority in Seneca's text, Democritus' devoted follower; D–K 70 B 1 with Vottero, op. cit. (n. 29), 624 n. 1.

connector continues to be felt in these chapters, albeit in a brief restaging of the progress made earlier in the book from the segregated analysis of individual elements (water, earth, etc.) towards the interactive kind of holistic viewpoint promoted in 6.16. We begin in 6.19.2 with a return to inferential analogy of the sort sampled in 6.10–11: just as air in a jar vibrates from the action of sound upon it, so Metrodorus extrapolates the cause of earthquake from subterranean air agitated by the action of other air falling upon it from above.⁸⁸ Within Seneca's ordering of his inventory, this theory has the appearance of being one-dimensional and unnecessarily restricted in scope, at least in comparison with the variable causes ascribed to Democritus in 6.20.1: 'ait enim motum aliquando spiritu fieri, aliquando aqua, aliquando utroque . . .'. Seneca here departs from Aristotle, who limits the Democritean cause of earthquakes to water (*Mete.* 2.7 365b 1–6), even though the two positions may not be irreconcilable: as Hall observes, 'N.Q. 6.20.4 suggests that *spiritus* had but a subordinate part in Democritus' earthquake theory: if so, Aristotle may have thought it not worth mentioning'.⁸⁹ If Seneca is correct, however, he may yet 'have exaggerated the importance of *spiritus* from his desire, mentioned in 6.5.1 and 6.20.1, to find a thinker who regarded earthquakes as due to several but not all the elements'.⁹⁰ The manipulative technique that Hall touches on here might also extend to the way in which Seneca portrays air and water as related causes of earthquake at 6.20.2 'etiamnunc quomodo de spiritu dicebamus [cf. 6.18], de aqua quoque dicendum est'; for this example of the elements working in parallel to each other prepares the way for the implication of all four of them — fire, air, earth and water — in the Epicurean theory of earthquake as reported in 6.20.5–7.⁹¹

The several elemental causes reported in Seneca's 'quotation' of Epicurus at 6.20.6–7 naturally accord well with the Epicurean and Lucretian view of the plurality of causation.⁹² But Epicurus himself singles out air and earth among 'many other' possible causes in his *Letter to Pythocles* (§105), while Lucretius refers to water, earth, and especially air but omits fire in his coverage of earthquakes at 6.535–607.⁹³ Seneca appears to have imported his own emphasis in embracing all four of the elements at 6.20.5–7⁹⁴ — a manoeuvre that restates in summary, as it were, the unifying emphasis that has gradually emerged in Seneca's survey of the different elemental causes of earthquakes earlier in the book. And yet despite this equalizing tendency that implicates all of the elements, the Stoic and Epicurean schools are seen to unite at 6.20.7–21.1 in giving priority to air as the primary cause. At 6.21.1 air is also cast as the primary element, an agent that arouses fire, sets water in motion, and moves the earth and is therefore an unsurpassed force of nature: 'nihil est in rerum natura potentius, nihil acrius'.⁹⁵ At this climactic point in Seneca's inventory, air stands alone not just as his preferred cause of earthquake but as the supreme force of cosmic cohesion, the symbolic embodiment and connecting principle of the 'one-world' view that has gradually taken shape in his carefully orchestrated catalogue as a whole.

On this 'one-world' approach Seneca's inventory marks a positive effort to bring the cosmos to order, or to resist the psychological chaos engendered by panic-stricken

⁸⁸ Further, Gilbert, *op. cit.* (n. 21), 303–4; present also in Aet., *Plac.* 3.15.6 (= Diels, *DG*, *op. cit.* (n. 30), 380.7–12; cf. D–K 70 A 21), but there so distant from *N.Q.* 6.19 that Setaioli, *op. cit.* (n. 23), 409 sets Seneca apart from that doxographical tradition.

⁸⁹ *op. cit.* (n. 22), 430.

⁹⁰ Hall, *op. cit.* (n. 22), 431.

⁹¹ Epic. fr. 351 Usener, 173 Arrighetti.

⁹² cf. Epic., *Ep. Her.* 79–80; *Ep. Pyth.* 86–7; Lucr. 5.526–33, 6.703–11 with Bailey, *op. cit.* (n. 5), 57–8, 1398.

⁹³ Further, Bollack, *op. cit.* (n. 21), 328–35. Cf. also Aet., *Plac.* 3.15.11 = Diels, *DG*, *op. cit.* (n. 30), 381.3–11 = Epic. fr. 350 Usener again for different causes, but both air-related.

⁹⁴ cf. Setaioli, *op. cit.* (n. 23), 411–12, positing Seneca's reliance on a source separate from the doxographical tradition represented by Aetius as well as from that 'genuinamente epicurea'.

⁹⁵ For air's *naturalis uis*, albeit with a different contextual emphasis, cf. 5.5–6 with Vottero, *op. cit.* (n. 29), 536 n. 4.

responses to such eventualities as the Campanian earthquake. An intriguing point of comparison for this effort at control is suggested by Thomas Rosenmeyer's stimulating remarks on Hugh Kenner's 'model of the Stoic inventory, the rage to control nature by means of catalogues and serial logging'.⁹⁶ This rage, which Rosenmeyer explores in relation to Senecan tragedy, strains to impose order, but with a negative concomitant:

With Seneca, the incorporation of man into an enumerative lexicon of the world is a necessity of the genre, a characteristic of Stoic tragedy. Or, to put it in another way, in Seneca the triumph of the extended syllabus is so overwhelming that the agent surrenders his role as enumerator (or discarder) and is himself pulled into the whirlpool of the inventoried universe.⁹⁷

In *Natural Questions* 6 Seneca's different kind of 'serial logging' initially sets up clean categories of alternative definition (theories first of water, then fire, etc.) before the lines are blurred by the mixed sequence in which he moves from one element to the next (water, fire, earth, then back to fire at 6.11 before he moves to air), by his discussion of the different elements as optional causes of earthquake (albeit air his favoured option), by the introduction of elements working in possible combination (6.20.1), and by his emphasis on air as an ubiquitous vitalizing force (6.16) that itself moves and arouses fire, water, and earth (6.21.1). It may be possible to interpret as another form of capitulation to nature this movement from the tidy, separative tendencies that prevail in the early stages of Seneca's inventory towards seeing the potential relatedness of the elements and of the different theories that he gathers; and given this emphasis on mergings and interactions, Seneca's cataloguing mechanism in *Natural Questions* 6 may further be viewed as a comforting but all too fragile operation, not unlike that undertaken by the cataloguing poet in Senecan tragedy: 'In the face of the threat of cosmic imbrication, of all being in all, the catalogue furnishes the poet with a saving grace, with the chance of maintaining a seeming separation and a working transparency'.⁹⁸ And yet what vindicates the cataloguing operation in *Natural Questions* 6 is precisely the sub-plot that is built into it, or the growing emphasis on world-coherence, and on air as the great unifier, that gathers momentum in and across his compilation of different theories. Yes, we can agree that, from one angle, Seneca's inventory must capitulate to nature, its 'serial logging' a doomed enterprise in the face of nature's seamless vastness; and yet, from another angle, the inventory simultaneously re-enacts that wholeness, and it is this restorative effort, *this* saving grace, that may yet distinguish the Senecan operation here from the troubled cataloguing operations that Rosenmeyer acutely discerns in Senecan tragedy.

v

Later in *Natural Questions* 6 Seneca qualifies the world/body analogy in one important respect, taking issue with the view that is pushed hard by his imaginary interlocutor at 6.24.4: "immo" inquit "ceu cum frigore inhorruimus, tremor sequitur, sic terras quoque spiritus extrinsecus accidens quassat". With *immo* the interlocutor rejects Seneca's surmise that the earth is moved from deep within itself by the action of the air that collects there in vast caverns. That the earth sustains an injury deep within itself is corroborated for Seneca by the 'fact' that whole cities have apparently collapsed into the gaping chasms

⁹⁶ T. G. Rosenmeyer, *Senecan Drama and Stoic Cosmology* (1989), 161.

⁹⁷ op. cit. (n. 96), 161.

⁹⁸ Rosenmeyer, op. cit. (n. 96), 161–2. In suggesting a certain similarity between the catalogue-operations in *Natural Questions* 6 and in Senecan tragedy, I, of course, hardly mean to imply that the same natural system operates in those very different Senecan areas, or that the tragedies offer a straightforwardly orthodox version of Stoic physics.

resulting from earthquakes (6.24.5). The interlocutor argues instead, on the analogy of the body shivering with cold, that earthquakes result from the trembling effects of air penetrating the earth's surface from outside.⁹⁹ But how then to account for the fact that earthquakes are localized in their effects? The whole body trembles, but only a part of the cosmic body is affected at any one time by parallel symptoms — an objection to the world/body analogy¹⁰⁰ that also informs Seneca's subsequent insistence that air accumulates under the earth in discreet caverns (6.25.3); for 'unless this were so, large expanses of the earth would be shaken and many regions disturbed at the same time'. This Senecan emphasis on segregation and compartmentalization below ground is perhaps tinged with irony, given the unifying tendencies that we have witnessed thus far in *Natural Questions* 6. And yet at least three factors sustain this cohering, 'one-world' vision in the later parts of the book.

First, despite the frailties just sampled in point of detail, the world/body analogy continues to function as a 'normalizer' of earthquakes. The air is brought to life at 6.25.1 as an animate being which 'with great force completely fills empty space underground and begins to struggle (*rixari*) and to think about (*cogitare*) a way out ...':¹⁰¹ as before,¹⁰² the spirited air breathes life into a Senecan world-organism whose localized tremblings are hardly aberrational or miraculous but systematic in their occurrence. Second, and to develop this focus on system, at 6.21.2 Seneca steers his inventory of causes in a different direction, taking up the distinction that Posidonius apparently drew between two kinds of quake,¹⁰³ one a jolting from beneath (*succussio*) as a consequence of the collapse of subterranean rock,¹⁰⁴ the other a tilt (*inclinatio*) that Seneca attributes to the pressure of air entrapped below ground.¹⁰⁵ In adding to the Posidonian scheme a third category, that of vibration (6.21.2 *tremor*, apparently his own contribution),¹⁰⁶ Seneca would seem to be making accommodation for the Campanian disaster (cf. 6.31.1 'non desit ... adsidue tremere Campania'); and the classification-process as a whole in 6.21–2 serves to 'normalize' earthquakes by providing a standardized template for the categorization of any and all occurrences, or a method of diagnosing variations of *iniuria* in the world-body according to fixed kinds of earthquake-symptom (*succussio*, *inclinatio*, *tremor*). Third, just as the seemingly unique impact of the Campanian earthquake is countered by this emphasis on conformity to type, so the many instances of earthquakes from all parts of the

⁹⁹ On the 'narrower Senecan theory', rejecting 'the theory of influx of air from above' (cf. 6.12.1, 13.4, 14 for 'the hypothesis of wind penetrating the earth') see Kidd, op. cit. (n. 7), 116–18 on fr. 12 E–K '<Earthquakes occur through the penetration of wind> into the hollows of the earth, or when wind is shut up in the earth ...' (with due caution on the question of whether Seneca's 'narrower theory' owes anything to Posidonius).

¹⁰⁰ cf. p. 135 above and n. 71.

¹⁰¹ For *rixor* fig. of things, OLD 2a (rare, in this sense in Varro and then Seneca; cf. 6.13.1 'rixia spiritus reciprocantis'); for *cogito*, cf. of the personified wind Virg., *Georg.* 1.462 'quid cogitet umidus Auster ...'. A. Setaioli, 'Elementi di *sermo cotidianus* nella lingua di Seneca prosatore II', *SIFC* 53 (1981), 43 n. 2 refers to 6.25.1 to illustrate his observation that in the *Natural Questions* 'le forze della natura sono personificate e viste come gli attori di un dramma cosmico'.

¹⁰² pp. 134–7 above.

¹⁰³ Fr. 230 E–K with Kidd, op. cit. (n. 7), 816–20; further, Gilbert, op. cit. (n. 21), 314–20; Traglia, op. cit. (n. 22), 748–9; Waldherr, op. cit. (n. 3), 59–63.

¹⁰⁴ So at 6.22.2–4 Asclepiodotus, Posidonius' pupil, for whom cf. 2.26.6 with Hine, op. cit. (n. 3, 1981), 317–18 and Kidd, op. cit. (n. 7), 30–3 on T 41 a, b.

¹⁰⁵ So 6.23.1. Cf. D. L. 7.154 = Posid. fr. 12 E–K for a Posidonian classification of four kinds of earthquake, with Ringshausen, op. cit. (n. 21), 19–30 and Kidd, op. cit. (n. 7), 817–19 for discussion of the types. Kidd (817–18) identifies Diogenes'/Posidonius' βρασματίας with Seneca's *succussio*, κλιματίας with *inclinatio*. For Kidd (818), moreover, 'Diogenes may preserve a combination of two classifications', one 'based on distinguishing vertical and horizontal earthquakes' — a distinction arguably reflected in Seneca's *succussio/inclinatio*.

¹⁰⁶ cf. Kidd, op. cit. (n. 7), 818. With *tremor* Seneca also revives the body-analogy (cf. 6.18.6 'corpora ... tremunt', 7 'nullus est tremor corpori', 24.4).

ancient world that Seneca surveys later in *Natural Questions* 6 provide a ‘normalizing’ perspective similar to that sampled earlier in 6.1.13, where equal or worse disasters at Tyre and in Asia, Achaia, and Macedonia¹⁰⁷ serve to generalize the singular experience of the Campanian occurrence. So also Atalante and Sidon (6.24.6);¹⁰⁸ Chalcis and Aegium, Helice and Buris (6.25.4);¹⁰⁹ and Paphos and Nicopolis, Cyprus and Tyre (6.26.4).¹¹⁰ In this enlarging context the tremors of Campania are resolved ever further into an expanding field of seismic activity that extends significantly to Egypt in 6.26.1:

Poteram ad hoc probandum [sc. that an earthquake extends over an area equal to the extent of a cavity of empty space below ground] abuti auctoritate magnorum uirorum qui Aegypton numquam tremuisse tradunt . . .

The rich, muddy soil that Egypt derived from the Nile was apparently so compacted that no empty spaces could exist below ground (6.26.1; cf. 4a.2.9–10). Egypt would thus seem to support Seneca’s argument that an earthquake presupposes the existence of a subterranean cavity — if only it were actually true that Egypt had never experienced a quake (cf. 6.26.2 ‘Sed mouetur . . . Aegyptus’).¹¹¹ Seneca partly reinforces his pose as a scrupulous researcher by manifestly not misusing (cf. *abuti*) the authority of his sources to advance his own agenda (i.e. exploiting the claim that Egypt has never had an earthquake to push the subterranean cavity-theory). But by rejecting the tradition that Egypt was free of earthquakes, Seneca also achieves something more, taking up and reinforcing his early emphasis on the essential ‘normalizing’ point that *no* place is not at risk: ‘omnes sub eadem iacent lege, nihil ita ut immobile esset natura concepit’ (6.1.12). Seneca’s universalizing emphasis allows no exceptions to the general rule, no *mira*. Hence his resistance at 6.26.2 also to claims that the island of Delos never experienced earthquakes.¹¹² In a *prosodion* to Delos, Pindar casts the island as ‘unmoved marvel of the broad earth’ (χθονὸς εὐρεί/-ας ἀκίνητον τέρας),¹¹³ a characterization apparently shared by Virgil:

Sed mouetur . . . Delos, quam Vergilius stare iussit: ‘inmotamque coli dedit et contemnere uentos’; hanc philosophi¹¹⁴ quoque, credula natio, dixerunt non moueri auctore Pindaro.

¹⁰⁷ cf. *Ep.* 91.9. Further, Vottero, op. cit. (n. 29), 582–4 nn. 26, 27 (including Tac., *Ann.* 2.47.1–4 on Asia in 17 C.E.), 28; Guidoboni *et al.*, op. cit. (n. 3), 195 for Achaia (no. 93 in their catalogue) and Macedonia (no. 94) in 61 C.E.

¹⁰⁸ Thuc. 3.89.3 (Guidoboni *et al.*, op. cit. (n. 3), 119–22 = no. 14 in their catalogue): in 426 B.C.E. a tidal wave produced by an earthquake did limited damage at Atalante, far less than in Seneca’s version; ‘[d]id he misremember, or take the reference from someone else?’ (Kidd, op. cit. (n. 7), 823 on fr. 232 E–K). Or did he dramatically enhance the given fact for effect? Sidon: after Atalante, Seneca’s ‘idem Sidone accidisse Posidonio crede’ (= fr. 232.3 E–K) implies another tidal wave, but from Strab. 1.3.16 (= Posid. fr. 231 E–K) it appears that a genuine earthquake struck Sidon (in 197 B.C.E.?): see Kidd, op. cit. (n. 7), 821–2 with Guidoboni *et al.*, op. cit. (n. 3), 145 no. 39.

¹⁰⁹ Chalcis (cf. 6.17.3), c. 197 B.C.E.?: Vottero, op. cit. (n. 29), 620 n. 4 with Guidoboni *et al.*, op. cit. (n. 3), 145–7 no. 40. Aegium, 23 C.E.?: Guidoboni *et al.*, 186 no. 81. Helice and Buris (cf. 6.23.4, 26.3, 32.8, 7.5.3–4, 16.2), 373 B.C.E.: Vottero, 634–5 n. 8, Guidoboni *et al.* 128–32 no. 24.

¹¹⁰ Paphos on Cyprus (cf. *Ep.* 91.9), 17 B.C.E.: Guidoboni *et al.*, op. cit. (n. 3), 177 no. 74; given *iam* (‘already familiar with this kind of disaster’, so soon after its foundation), Nicopolis presumably of Epirus, founded by Octavian as a ‘victory-city’ after Actium (cf. Suet., *Aug.* 18.2), but no seismic activity of this Nicopolis is found in the historical record down to Seneca’s age (cf. Parroni, op. cit. (n. 35), 589). Cyprus generally: cf. for post-Senecan reports Guidoboni *et al.*, 214 no. 101 (77 C.E.), 246, 247, 249 nos 132, 136, 140 (earthquakes in Cyprian Salamis in 293–306 C.E., 332, 342), 277 no. 157 (c. 370 C.E.). For Tyre, 6.1.13 and n. 107 above.

¹¹¹ cf. Plin., *Nat.* 2.195 ‘Galliae et Aegyptus minime quatiuntur’, with Waldherr, op. cit. (n. 3), 44: ‘Ägypten weist dagegen [sc. in contrast to other eastern-mediterranean regions] eine sehr niedrige Erdbebenfrequenz auf’. But for what evidence there is of ancient seismic activity, Guidoboni *et al.*, op. cit. (n. 3), 87–90.

¹¹² For collected testimony of earthquakes there, Guidoboni *et al.*, op. cit. (n. 3), 109–11 no. 4 (c. 490 B.C.E.), 117–18 no. 11 (shortly before 431 B.C.E.), 128 no. 23 (shortly before 373 B.C.E.), 171 no. 66 (c. mid-first century B.C.E.), 188–9 no. 86 (c. 47 C.E.).

¹¹³ Fr. 33c 3–4 Snell-Maehler.

¹¹⁴ Doubtful by some editors because Seneca’s aspersion against philosophers in general would seem to be ill-fitting (Oltremare, op. cit. (n. 47), 283 n. 2 with Vottero, op. cit. (n. 29), 190) — unless he means a particular class of philosophers (so Mazzoli, op. cit. (n. 2), 170 n. 46: ‘Seneca allude certo ai naturalisti greci’).

But whereas Seneca's Delos is here cast as *immota* in the sense of 'without earthquakes', at *Aen.* 3.77 Apollo 'granted that Delos remain unmoved and despise the winds', the island no longer wandering afloat but fixed in its location.¹¹⁵ In wittily modifying the Virgilian sense at 6.26.2 and so pointedly emphasizing Virgil's authorial will ('... stare iussit'),¹¹⁶ Seneca again targets 'la poesia mitologica'¹¹⁷ as a source of 'unscientific' misinformation that here stands in contrast to his own strivings, apparently free as they are from all fictional embellishment. At a secondary level, moreover, even before Seneca turns to Thucydides and Callisthenes for testimony that Delos did indeed experience earthquakes,¹¹⁸ the transparency of the distortion of Virgil surely signals to the knowing reader the fragility of the evidence for an earthquake-free Delos;¹¹⁹ and for the reader who delves deeper, a similar ambiguity in ἀκίνητον ('no longer floating' as opposed to 'not shaken by earthquake?')¹²⁰ may equally compromise the Pindaric evidence.

Exceptional cases such as Delos are rumoured to be, then, are soon brought back within the reach of Seneca's 'normalizing' logic in *Natural Questions* 6, where no anomalies and no wonders (*mira*) are allowed to circumvent the *ratio* of earthquakes. Hence he moves in 6.27 to calm the tremors caused by the apparent peculiarities of the Campanian disaster, among them hundreds of sheep found dead: 'aiunt ... sexcentarum ouium gregem exanimatum in Pompeiana regione' (6.27.1, taking up 6.1.3). In explaining the particular phenomenon Seneca again invokes parallels elsewhere (cf. 6.28.1 'quid quod pluribus Italiae locis per quaedam foramina pestilens exhalatur uapor ...?') and reverts to general principles, countering the 'rhetoric of *mirum*'¹²¹ in asserting that 'a plague usually occurs after a great earthquake, and this is not surprising' (6.27.2). Nor is it any wonder (cf. 6.27.4 *non miror*) that the sheep were infected by the poison scattered by the lifeless, pestilential air released from below during an earthquake: their heads close to the ground, they feel the full impact of the tainted air that would also affect humans if it were not cleared by the abundance of pure air above ground (6.28.2–3).¹²² At 6.29.1 Seneca returns to the fear aroused by the Campanian quake, fear that 'shatters minds' even when 'confined to individuals and modest', but whose worst effects are felt when it induces public panic. The spread of this contagious *metus* in 6.29 finds a suggestive allegory in Seneca's detailed

¹¹⁵ Honour done, of course, because Delos sheltered Apollo when Leto bore him; for the legend, e.g. Hom., *H. Ap.* 14–18, Callim., *Hymn* 4 (to Delos), esp. 51–4, Ov., *Met.* 6.185–91, Stat., *Theb.* 8.197–8 'partu ... ligatam/ Delon', Hygin., *Fab.* 140 etc. with R. D. Williams, (ed.), *P. Vergili Maronis Aeneidos Liber Tertius* (1962), 70 on 3.75–6.

¹¹⁶ On this 'inusuale formula di introduzione del verso virgiliano', De Vivo, op. cit. (n. 1), 52, arguing that it marks 'con forza l'assoluta infondatezza di una convinzione che è frutto di fantasia poetica' (but cf. for qualifying remarks P. Parroni's review of De Vivo and other works in *RFIC* 120 (1992), 501). On the virtual collusion of Virgil and Apollo as the subject of *Aen.* 3.77 *dedit*, De Vivo 53 with G. Lieberg, *Poeta Creator: Studien zu einer Figur der antiken Dichtung* (1982), 124 ('Senecas Verfahren, Vergil an die Stelle Apolls zu setzen...').

¹¹⁷ De Vivo, op. cit. (n. 1), 51; cf. already pp. 136–7 above for 'correction' of Virgil.

¹¹⁸ 6.26.2–3, where the juxtaposition of *Pindaro. Thucydides*, fiction vs. 'truth', is itself telling. At 6.26.3 Callisthenes' voice = *FGH* 124 fr. 19 Jacoby; further on this historian, Aristotle's nephew, pp. 144–5 below on 6.23.2–3 with Kidd, op. cit. (n. 7), 797–8, and cf. 7.5.3–5. Thucydides (2.8.3) reports that Delos first felt an earthquake a little before 431 B.C.E., presaging the Peloponnesian War, but Herodotus claims (6.98.1) that the only quake experienced at Delos 'down to my time' occurred in c. 490 B.C.E. Perhaps a Thucydidean 'correction' of Herodotus (so A. Momigliano, 'Erodoto e Tuciddide sul terremoto di Delo', *SIFC* 8 (1939), 87–9), unless different earthquakes are contemplated; see A. W. Gomme, *A Historical Commentary on Thucydides. Volume II* (1956), 9 with Guidoboni *et al.*, op. cit. (n. 3), 110 and esp. 117–18 and Hine, op. cit. (n. 7), 63–4.

¹¹⁹ The transparency is ironic given Seneca's reluctance to take liberties in 6.26.1 'abuti auctoritate magnorum uirosum'; *Ultramarine*, op. cit. (n. 47), 283 n. 1.

¹²⁰ cf. J. Sandys (ed.), *The Odes of Pindar* (1924), 563 n. 1: 'This [sc. Delos no longer a floating island] seems better than the rendering "unshaken by earthquake"', albeit ἀκίνητος of Delos without earthquakes also at Herod. 6.98.3. ¹²¹ p. 126 and n. 7.

¹²² For suggestive shades in 6.27–8 of the Lucretian plague (6.1090–1286), again reflecting Lucretius' broader influence on *Natural Questions* 6, De Vivo, op. cit. (n. 1), 96–7.

coverage in 6.27–8 of the pestilence unleashed by the air that erupts from below ground.¹²³ If the sheep are most vulnerable to the plague at 6.27.4, their heads so close to the ground, at 6.29.2 those most infected by the panic are people of a blinkered, ‘terrestrial’ mindset, their lack of perspective and higher insight (such as Seneca aims to promote) making them vulnerable to every shudder at ground level (cf. 6.29.2 ‘leuissima fere ingenia in tantum uenere formidinis ut sibi exciderent’). If the abundance of pure air above ground counters the noxious effusions from below (6.27.4), Seneca’s ministrations in *Natural Questions* 6 offer their own breath of fresh air, as it were, in moving to dispel the fear that is stirred by events underground; they offer a larger breadth of perspective.

When our focus is redirected to this ‘whole’ perspective, the local effects of the Campanian (or any other) earthquake become inseparable from the universal process. At 6.1.3 Seneca reports that statues were cracked during the quake, and at 6.30.1 he turns to demystifying the phenomenon by a comparison that might at first seem hyperbolic to an extreme:

Statuam¹²⁴ diuisam non miror, cum dixerim montes a montibus recessisse, et ipsum diruptum esse ab imo solum:

haec loca ui quondam et uasta conuolsa ruina
 (tantum aeuī longinqua ualet mutare uetustas)
 dissiluisse ferunt, cum protinus utraque tellus
 una foret. uenit ingenti ui pontus et ingens
 Hesperium Siculo latus abscedit, aruaque et urbes
 aequore diductas angusto interluit aestu.

The three modifications that Seneca introduces to *Aen.* 3.414–19¹²⁵ here — *ingenti* for *medio*, *ingens* for *undis* in 417; *aequore* for *litore* in 419 — have been explained on various grounds, among them the pitfalls of citation from memory.¹²⁶ But if we allow for a more calculating intervention here, the repetition of *ingens* in 3.417 dramatically enhances the already massive Virgilian force that causes the sea to separate Sicily from Italy. The effect is to argue impressively *ex maiore exemplo*: if nature is capable of such vast rupturings, and if an earthquake can split apart whole nations and cities (cf. 6.30.2 ‘urbium ... gentiumque discidium’) and ‘whole walls and entire homes’ (6.32.5), what surprise if a statue has equally been split apart? The more significant point for now, however, is that the effects of the earthquake here differ in degree but not in their essential nature. Lands, cities, houses, statues: all are equally susceptible to the splitting-action of earthquakes, a cohering vision that is underscored not just by the neat encapsulating effect that Seneca achieves by placing *statuam* as the first and last word in the chapter, but also by the way in which he connects different world-parts through careful verbal overlaps.¹²⁷ So at e.g. 6.30.1 the ground is *diruptum* ... *ab imo* while at 6.30.4 the bronze statue is *diruptum*, at 6.30.5 severed *ab imo ad caput*; at *Aen.* 3.419 in 6.30.1 the fields and cities of Italy/Sicily are separated (*diductas*) by the sea, while at 6.30.4 ‘we have seen buildings move apart with their corners split (*diductis ... angulis*)’; Sicily is cut away (6.30.3 *resecta*)¹²⁸ from Italy, the statue cut in two (*sectam*) at 6.30.5.

¹²³ cf. already De Vivo, op. cit. (n. 1), 94 on Seneca’s possible transference in 6.27 of language ‘dalla sfera umana, fisica e morale, a quella naturale’; so e.g. §2, of the subterranean ‘aër, qui, uel terrarum *culpa*, uel *pigritia* et aeterna nocte *torpescens* [grauis ... est]’.

¹²⁴ *statuas* at 6.1.3, but the shift (cf. Hine, op. cit. (n. 7), 65 n. 28) may simply signal no surprise at a/any statue being split.

¹²⁵ For the separation of Sicily from Italy by earthquake in Roman (literary) tradition, Williams, op. cit. (n. 115), 144 on *Aen.* 3.414f. with Vottero, op. cit. (n. 29), 648 n. 3.

¹²⁶ So Vottero, op. cit. (n. 29), 650 n. 3; more broadly on the question, De Vivo, op. cit. (n. 1), 72–3.

¹²⁷ On the following overlaps, De Vivo, op. cit. (n. 1), 71–2.

¹²⁸ *resecta* A. Gercke in his Teubner (1907) after Gronovius, *reiecta* Hine in his Teubner (1996) after most modern editors; see further Vottero, op. cit. (n. 29), 192 for *rei-*, but with coverage of editors favouring *res-*.

Partly through these verbal bindings, a ‘whole’ picture emerges in 6.30 of different levels of seismic activity and effect, levels ranging from the domestic and local to the more global; any given earthquake may be viewed as but one part, a single manifestation, of a general phenomenon. Already at 6.30.2 Seneca explains the astounding force of earthquakes by reference to the *totum*: ‘quorum mira ut *ex toto* uis est: quamuis enim *parte* saeuat, *mundi* tamen *uiribus* saeuat’. The relation drawn here between *pars* and *totum* is suggestively emblematic of the mindset that Seneca’s broader investigation of earthquakes in *Natural Questions* 6 has gradually inculcated in us, guiding us to see any particular occurrence in relation to the universal process that ‘normalizes’ it. It is *this* grasp of the totality, I suggest, that contributes importantly, even fundamentally, to the strength of mind (*robur*) that Seneca claims to derive *a contemplatione naturae* in his closing chapter (6.32.1) — that breadth of philosophical vision that represents true possession of the world, as opposed to the kind of ‘false’ ownership that perhaps characterizes Alexander the Great at 6.23.2–3. There, Seneca would seem to pay a remarkable tribute to the historian Callisthenes,¹²⁹ that figure of

nobile ingenium et furibundi regis inpatiens. hic est Alexandri crimen aeternum, quod nulla uirtus, nulla bellorum felicitas redimet; nam quotiens quis dixerit, ‘occidit Persarum multa milia’, opponetur ei Callisthenes,¹³⁰ quotiens dictum erit, ‘occidit Darium, penes quem tunc maximum regnum erat’, opponetur ei Callisthenes; quotiens dictum erit, ‘omnia oceano tenuis uicit, ipsum quoque temptauit nouis classibus et imperium ex angulo Thraciae usque ad orientis terminos protulit’, dicetur, ‘sed Callisthenem occidit’. omnia licet antiqua ducum regumque exempla transierit, ex his quae fecit nihil tam magnum erit quam <hoc>¹³¹ scelus.

Why this sudden, and extraordinary, outburst of praise for Callisthenes, seemingly the only instance in the *Natural Questions* where Seneca embarks on a digressive eulogy of one of his author-sources? Hints of a coded anti-Neronian significance have been detected here,¹³² while Alexander’s portrayal as a predatory conqueror is perhaps meant to reinforce his broader characterization in the *Natural Questions* (cf. 3 *praef.* 5, 5.18.10) and across the Senecan corpus more generally.¹³³ But given Callisthenes’ historical investigations into the cause of the inundations that buried Helice and Buris (6.23.4; cf. 6.26.3), and given the nature and extent of his writings, including a ten-book *Hellenica* covering the period 386–356 B.C.E., his different form of world-exploration and probing into nature may be set in salutary contrast to Alexander’s destructive grip on the world that (briefly) submits to him. Moreover, in 327 B.C.E., in an incident that led to his being falsely implicated in a conspiracy against Alexander and subsequently executed, Callisthenes apparently resisted Alexander’s efforts to impose *proskynesis* (the prostration of an inferior before his superior) after the style of the Persian court on Macedonians and Greeks: ‘grauitas uiri et prompta libertas inuisa erat regi, quasi solus Macedonas paratos ad tale obsequium moraretur’ (Curt. 8.5.13).¹³⁴ If this reputation for brave independence and

¹²⁹ For whom p. 142 above and n. 118.

¹³⁰ But ‘opponetur ei “et Callisthenen [sc. occidit Alexander]”’ is read by most modern editors before Hine with MSS in the δ -branch (see Hine’s Teubner (1996), xiii), perhaps rightly if, with P. Parroni, ‘Testo ed esegesi nelle *Naturales Quaestiones*’, in P. Fedeli (ed.), *Scienza, cultura, morale in Seneca* (2001), 153, Hine’s reading is seen to reduce the dramatic tension of this passage (with possible autobiographical overtones: see below and n. 132).

¹³¹ See Hine, op. cit. (n. 13), 107.

¹³² So I. Lana, *Lucio Anneo Seneca* (1955), 15 (cited by Vottero, op. cit. (n. 29), 634 n. 4): Seneca’s digression is explicable ‘solo se in Callistene Seneca intenda raffigurare se stesso, e in Alessandro Nerone’. Further, Wallace-Hadrill, op. cit. (n. 3), 188 and n. 26, Hine p. 64 in this volume.

¹³³ For full references and bibliography, Vottero, op. cit. (n. 29), 380 n. 22 (‘I giudizi di Seneca su Alessandro Magno sono quasi sempre fortemente negativi’).

¹³⁴ cf. 8.8.21 ‘haudquaquam aulae et adstantium accommodatus ingenio’, Arr., *Anab.* 4.12.6–7, D.L. 5.5, Justin., *Epit. Hist. Phil.* 15.3.3–7.

outspokenness is recalled at 6.23.2 ‘nobile ingenium et furibundi regis inpatiens’, his *libertas* offers a suggestive paradigm for the fearless independence of outlook that achieves that ultimate goal and refuge in *N.Q.* 6, ‘contempt for life’ (cf. 6.32.4 ‘*Pusilla res est hominis anima, sed ingens res contemptus animae*’).

VI

The radical shift of perspective that *Natural Questions* 6 has promoted thus far, diverting our focus from the particular to the general and fortifying us against trauma at the local level by centring our existence in the cosmic whole, culminates in Seneca’s final, liberating revision of the significance of death: ‘*ipsum perire non magnum est*’ (6.32.5).¹³⁵ In contrast to Alexander, that ephemeral conqueror, the enlightened mind that arrives at perceiving life not for itself but within the context of the universal process achieves a serene form of world-mastery that embraces all parts, sea, sky, and earth, at 6.32.4:

hanc [sc. uitam] qui contempsit securus uidebit *maria* turbari, etiamsi illa omnes excitauerunt uenti ... securus aspiciet fulminantis *caeli* trucem atque horridam faciem, frangatur licet *caelum* et ignes suos in exitium omnium, in primis suum, misceat. securus aspiciet ruptis compagibus dehiscens *solum*, illa licet inferorum regna retegantur.

If from this secure ‘wholeness’ of perspective we look back upon Seneca’s opening account of the Campanian earthquake in 6.1.1–2, we find a much narrower viewpoint on display there, as if he begins *in angusto* (cf. 1 *praef.* 10):

Pompeios, celebrem Campaniae urbem, in quam ab altera parte Surrentinum Stabianumque litus, ab altera Herculansense conueniunt, et mare ex aperto reductum ameno sinu cingunt, consedisae terrae motu uexatis quaecumque adiacebant regionibus, Lucili uirorum optime, audiuius, et quidem hibernis diebus, quos uacare a tali periculo maiores nostri solebant promittere. Nonis Februariis hic fuit motus [Regulo et Verginio consulibus]¹³⁶ qui Campaniam, numquam securam huius mali, indemnem tamen et totiens defunctam metu, totam magna strage uastauit ...

This early attention to the details of precisely where and when the earthquake happened may help to establish Seneca’s credentials as a careful investigator in *Natural Questions* 6 while also evoking a certain serenity that was shattered when the disaster struck: the profusion of local names in the opening sentence and the luxuriant description of the bay that surrounds Pompeii (as if the town is protected by the shores that bound it) generate a familiar and cosy atmosphere, as if lulling us into a calm before the storm.¹³⁷ But in this careful mapping-process we witness not just the literal epicentre of the quake but also a concentration on the particular, an epicentre of descriptive detail, that will gradually be resolved as we begin to view the Campanian disaster in the larger, ‘normalizing’ context that takes shape in the course of the book.

As we progress towards this broader perspective and begin to see the Campanian disaster from an alleviating, cosmic vantage-point, we also approach that main objective

¹³⁵ This after, and therapeutically to re-rehearse, the preliminary exercise to similar effect at 6.1.4–3.4. Death of course a Stoic indifferent (cf. *Dial.* 6.19.5; *Ep.* 82.10–13; *SVF* III 117.5–8, 256.33–5); for scorn of death, cf. *N.Q.* 2.59.3 with Hine, op. cit. (n. 3, 1981), 440 on the positive injunction *contemne mortem*.

¹³⁶ On the possible interpolation, n. 3 above.

¹³⁷ The fickleness of fortune is perhaps all too starkly reflected in the disaster befalling Pompeii in particular, given that its portrayal as *celebris urbs* here ‘donne à penser que de riches familles, influentes à Rome, y résidaient ou y possédaient des biens immeubles’ (J.-P. Adam, ‘Observations techniques sur les suites du séisme de 62 à Pompéi’, in C. L. Livadie, (ed.), *Tremblements de terre, éruptions volcaniques et vie des hommes dans la Campanie antique* (1986), 68).

in the *Natural Questions* as a whole, ‘to have seen *the all* with your mind’ (‘animo omne uidisse’, 3 *praef.* 10). In this respect the sixth book contributes to a broader thematic design or emphasis in the *Natural Questions*, even as it addresses a significant living reality for a Roman audience. After all, as Hine remarks, ‘[e]arth tremors and earthquakes were a regular feature of life in the mainland and islands of Greece and Italy, and in Asia Minor: few adults in these regions can have been without some experience of at least minor tremors and minor damage’.¹³⁸ But beyond this topical relevance of *Natural Questions* 6, the protections that Seneca offers against fear of earthquakes, ‘normalizing’ them by setting them in the context of ‘the all’, are themselves versatile in their applicability to so many other of life’s stresses and tremors. And so as we progress in *Natural Questions* 6 *ex oculis ad rationem*, we might also find ourselves transported from a literal to a more nuanced and figurative view of earthquakes, which themselves offer a suggestive analogy or metaphor for *any* significant disaster or affliction, public or private, physical or emotional, that destabilizes life. If, then, we approach *Natural Questions* 6 purely as an exercise in earthquake-relief, we may indeed find in it ‘a peculiar comfort. Where (one might wonder) is the remedy in being told that dangers are actually more widespread than we might have thought (VI 2.1)?’¹³⁹ But as we begin to reconcile *Natural Questions* 6 with the mind-expanding process towards seeing ‘the all’ that gradually unfolds in the work as a whole, the point of ‘being told that dangers are actually more widespread than we might have thought’ may strike us differently, especially if it causes us to turn our gaze away from the aggravating *unum* and to focus instead on the alleviating *totum*.

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¹³⁸ *op. cit.* (n. 7), 58.

¹³⁹ Inwood, *op. cit.* (n. 34), 138, adding in mitigation Stoic appeal ‘to a rational person’ (138 n. 41, whence ‘Seneca is, I suspect, aware that this consideration will provide cold comfort to many’), and vindicating this ‘peculiar comfort’ by positing Seneca’s recognition of ‘a dual audience: *prudentes* will be freed from fear by the use of reason, and the *imperiti*, those not trained in philosophy, will find comfort in the abandonment of (false) hopes’.