

# XI

## Stability and Change

### (a) *The limits of the world*

Following Melissus' account rather than that of Parmenides, I turn next to (T4), the theorem that *O* is spatially infinite. The Melissan texts read thus:

But just as it is always, so it must always be unlimited (*apeiron*) in magnitude too (**160: B 3**).

Nothing having both a beginning and an end is either eternal or unlimited (**161: B4**).

I construe 'unlimited in magnitude' in **160**, and 'unlimited' in **161**, as 'spatially infinite'. The arguments against this orthodox position are unconvincing.

Some commentators suppose that Melissus infers (T4) from (T3), spatial from temporal infinity; and they point out the folly of the inference.<sup>1</sup> But **160** implies not that (T4) is inferred from (T3) but that the argument for (T4) is parallel to that for (T3); and **161** corroborates the implication. Thus I suppose that Melissus hoped to deploy the argument of **159** for a second time, concluding to (T4). And presumably the central proposition in his argument will therefore have run:

(1) If *O* is generated, then *O* at some place began to be generated and *O* at some place ceased to be generated;

and (1) will have been used to ground:

(2) If *O* is generated, then *O* has a spatial beginning and a spatial end.

The general thought behind (1) seems to be this: if *O* undergoes a process of generation, then *O* must come into existence in stages, and so there must be a first piece of *O* to be generated and also a last piece; and thus *O* cannot be spatially infinite. There are at least three flaws in that argument. First, why suppose (1) to be true? Why may not *O* spring fully-formed from Zeus' head? Second, (1) does not entail (2): suppose that *O* is generated in instalments, and that *A* is the first and *Z* the last piece of *O* to be generated; still, it does not follow that *A* and *Z* are on the edges of *O* or that *O* has edges at all. Third, (2) does not entail (T4): in inferring (T4) from (2) Melissus again confuses 'if *P*, then not-*Q*' with 'if not-*P*, then *Q*'. The Melissan fallacy is committed again.

Some scholars, appalled by the febrile appearance of this argument, have ascribed a different piece of reasoning to Melissus. Speaking of the Eleatic philosophy, Aristotle reports thus:

They say that the whole is one and unmoved, and some that it is unlimited; for the limit would limit it against the void (**162: GC 325a15-16=A8**).

Scholars say that ‘some’ refers to Melissus; and that Aristotle’s argument here is the genuine Melissan attack on spatial finitude.<sup>2</sup>

I doubt it. First, **162** cannot represent the argument alluded to in **161**: if **162** is a Melissan argument for (T4), then Melissus had two arguments for (T4). Second, the argument in **162** rests on (T13) or something like it: the denial of the void. Now from (T13) we can only infer (T4) if we use (T5), the uniqueness theorem; and (T5), as we shall shortly see, is deduced from (T4). If **162** were Melissan, it would represent a simple circularity: its argument is as frail as that of **161**. Third, Aristotle does not mention Melissus by name in **162**; the passage, which is designed to explain the philosophical ambience of the birth of atomism, reads to me more like an Aristotelian *pot-pourri* than a piece of serious-minded historical doxography. The relation between **162** and Melissus is similar to that between **16** and Anaximander (see above, p. 35): the passage contains thoughts on an Eleatic theme, not reports of Eleatic pronouncements.

**162** does not help (T4); and **161** remains impotent. Yet (T4) is an important theorem of Melissan metaphysics, and we might properly look to support it from the poem of Parmenides. What, then, did Parmenides have to say on the subject? The question is highly controversial. It rests on the interpretation of **156**. 42–9, to which I now turn.

The traditional and natural reading of those lines has Parmenides argue that what exists is finite and spherical; and if that reading is correct, then far from supporting (T4), Parmenides is committed to its negation. Aristotle observed that ‘we should think that Parmenides spoke better than Melissus; for the latter calls what is infinite a whole, while the former says that the whole is limited, “equally balanced from the middle”’ (*Phys* 207a15–17=**28 A 27**; cf. Aëtius, **30 A 9**). The contrast between a finitist Parmenides and an infinitist Melissus is thus ancient; and a unanimous tradition repeats it. There is, however, a rival reading of lines 42–9; and on that reading Parmenides anticipates Melissus and argues for (T4). The reading requires attention; but first I shall expound a version of the traditional view.

The logical structure of lines 42–9 is fairly clear: a central core of argument in 44b–48 is preceded and followed by a statement of the thesis to be proved.<sup>3</sup> Let us look first at the central core.

The argument is supposed to establish the proposition stated in lines 44b–45: ‘...neither any more nor any weaker can it be here or here’. I take that Delphic utterance to announce the ‘existential homogeneity’ of *O* in space. By that revolting phrase I mean something like this:

(3) Every subvolume  $v_i$  of the volume of space determined by the boundaries of *O* contains some existent part,  $O_i$ , of *O*.

There cannot, in short, be any spatial gaps or holes in *O*. (3) is supported by two considerations. The first, lines 46–47a, is moderately clear, though the text of line 46 is uncertain: ‘neither is there anything that is not, which might stop it from reaching its like’; i.e., if you start from some point in *O* you cannot come across any non-existent bit of *O* which will block your progress to ‘its like’, i.e., to another existent bit of *O*. You cannot do so for the simple reason that there can be no non-existent bits of *O*. The second consideration occupies lines 47b–48: ‘nor is there anything that is, so that there might be of what is here more and there less—since it is all inviolable’. Conceivably Parmenides is saying that no part of *O* can be ‘more’ or ‘less’ existent than any other. That is true; for there is no sense at all in the notion of one part of a thing being ‘more

existent' than another (even if we can, in other contexts, graft some Platonic sense onto the odd notion of 'being more real'). But it is hard to see how Parmenides' assertion that 'it is all inviolable (*asulon*)' supports that.<sup>4</sup> Nor is it clear how the truth is related to (3).

From (3) we are to infer that '...equal from all directions, it meets the limits alike' (line 49). But (3) says nothing about spatial 'equality'; and it makes no mention of 'limits'. The second omission is explicable; for line 42a has already asserted that 'there is a furthest limit', and that is intended as a premiss for the argument of 42–9. Thus 42–9 first state that *O* has limits, and then establish (3); and from those two propositions they infer that *O*, 'like the bulk of a well-rounded ball', 'meets the limits alike'. In short, *O* is bounded (line 42); and *O* is spatially homogeneous (lines 44–5); therefore *O* is a sphere (line 49).

Parmenidean entities, unlike Melissan entities, are finite in extent; and they are spherical. That conclusion accords with a long-standing tradition.<sup>5</sup> Some scholars assert that Parmenidean spheres are geometrical, not physical entities; and they find in the contrast between the Way of Truth and the Way of Opinion an adumbration of the distinction between the abstract realm of pure mathematical entities and the mundane world of nature. But that assertion goes far beyond the evidence of the fragments.

The traditional interpretation of lines 42–9 has come under heavy fire.<sup>6</sup> I shall mention five objections to it. 'According to the traditional interpretation, the argument uses as a premiss the thesis that *O* has spatial boundaries; but nothing in 156 entitles Parmenides to that thesis. Rather, "limit" in line 42 must be taken in a metaphorical sense: it refers to the "invariancy" of *O* which (3) then articulates.' I cannot believe that: the language of lines 42 and 49 is resolutely spatial; and it is hard to take it all as a metaphor for invariancy. Parmenides has already argued that *O* is motionless, and his argument refers to 'limits' (lines 30–1). He assumed, I guess, that if *O* is motionless, then *O* must remain within fixed spatial limits. The assumption is highly plausible; and it is true provided that *O* is finite in magnitude.

'The move from (3) to "*O* is equal from all directions' 'is evidently invalid: Parmenides could not have meant to make it; and "equal from all directions" is only a metaphor.' I sympathize with the objection; but the remedy the objector proposes is less acceptable than the ill he seeks to cure. Parmenides, on any account, is not at his best in these lines. I suppose he thinks that if *O* is internally homogeneous it must have, so to speak, an externally homogeneous façade; and in that case it must be a regular solid, if not necessarily a sphere.

'The prospectus in lines 3–4 does not mention sphericity.' Line 4, on the common reading, does however say that *O* is 'complete'; and that is naturally connected with *tetelesmenon* in line 42, and hence with sphericity. On my reading, 'balanced', the prospectus picks out the feature with which most of lines 42–9 are occupied. The relation between prospectus and text is not tidy on that reading; but it is no worse than that between the prospectus and lines 5–21.

'The argument used to reject any internal gaps in *O* will equally show the impossibility of anything beyond *O*, and hence will show that *O* is infinite. (Moreover, the importation into (3) of reference to *parts* of *O* is textually unwarranted: instead of (3) we require some proposition which eliminates external as well as internal non-entity).' Again, I have only a weak reply: (3) is not the only interpretation of the text,

but it is a plausible one; and Parmenides' argument, even if it could show the lack of any non-entity beyond *O*, does nothing to disprove the suggestion that *O* is surrounded and close-packed by other entities, and hence nothing to establish the infinitude of *O*.<sup>7</sup>

'Parmenides must surely have asked himself the question: What lies outside the Sphere? And he must have hit upon the celebrated dilemma of Archytas:

Archytas, according to Eudemus, put the argument thus: 'Standing at the edge (e.g. at the heaven of the fixed stars), could I extend my hand or my cane outside it or not?' That I could not extend it is absurd; but if I do extend it, then what is outside will be either body or space (163: Eudemus, fr. 65W=47 A 24).

Anticipating Archytas, Parmenides cannot have believed in a finite spherical existent'. I answer: first, why should Parmenides have anticipated Archytas' subtle thought? Second, if he did, why should he have anticipated Archytas' dubious answer to his dilemma? Third, if the subject of Parmenides' deduction is not the Universe but any object of inquiry, then Archytas' argument is simply irrelevant.

It is certainly not the case that Parmenides clearly and explicitly argued for an infinite existent. Indeed, had such an argument been in his mind, he could hardly have found worse terms in which to expound it than those he uses in lines 42-9; for almost every reader of those lines has taken them to argue in precisely the opposite sense. On the other hand, if lines 42-9 do argue that any existent must be a finite sphere, they do so in an obscure and unsatisfying fashion. I conclude lamely: first, lines 42-9 contain no good or interesting argument; second, they are probably intended in the sense a long tradition ascribes to them. On any account, Melissus represents an advance over Parmenides here.

#### (b) *The Eleatic One*

The most celebrated of Eleatic doctrines is that of monism; and it is also the most shocking. After all,

It is patent to the eye that cannot face the sun  
The smug philosophers lie who say the world is one.

But then those philosophers will retort, smugly but philosophically enough, that the eye is a bad purveyor of fact; and that pure reason bears out their solitary view. At all events, such is the retort that an almost unanimous tradition has ascribed to Parmenides, to Melissus, and to Zeno. From Plato onwards, students of philosophy have talked, in capitals, of the Eleatic One.

The Milesians, of course, were monists. But their 'material' monism was a milk-and-water affair compared to the heady Eleatic potion. Eleatic monism, or 'real' monism as I shall call it, does not say that everything is made of some single stuff; it says that there

exists just one single thing: one reality, one entity. And that Melissus held and argued for such a strange thesis is indubitable.

Here is the relevant text:

If it were [unlimited] it would be one; for if it were two, they could not be unlimited, but they would have limits against one another (**164: B6**).<sup>8</sup>

Eudemus objected to the argument: ‘Why is it one? Not because several things will somehow be limited against one another; for past time is thought to be unlimited, though it is limited against the present’ (fr. 41 W=Simplicius, *ad B 5*; cf. *MXG* 976a31=A 5). Convinced by Eudemus’ argument, some scholars have saved Melissus by insisting that his ‘real object was...to prove its infinity from its unity’.<sup>9</sup> But that scholarly suggestion gratuitously rearranges the train of Melissus’ thought; and Eudemus’ objection is in fact an irrelevancy. By (T3) and (T4) *O* has no temporal and no spatial boundaries. To infer monism from that we need only the weak auxiliary premiss that if *O* and *O'* have exactly the same spatio-temporal co-ordinates, then  $O=O'$ . Thus take any two entities, *O* and *O'*: by (T3) and (T4) both *O* and *O'* are eternal and infinite; hence a spatial point *p* falls within *O* at *t* if and only if it falls within *O'* at *t*. Hence, by the auxiliary premiss,  $O=O'$ . The argument is valid: Melissus escapes Eudemus’ objection because *O* is limitless in *all* directions, unlike past time which is ‘limited’ by the present.

Melissus’ argument for monism is, I think, correct. What of Parmenides? If my tentative conclusions about lines 42–9 are right, he cannot have anticipated Melissus’ argument for (T5), for he did not accept (T4). And in any event, there is no trace in the fragments or in the doxography of the Melissan argument. Then did Parmenides argue for monism? And if so, how?

There is doxographical testimony enough that Parmenides was a real monist; yet the fragments themselves, though they preserve the whole of the Way of Truth, offer very little that even appears to bear upon the matter. I shall avoid what would be a long and negative discussion, and concentrate on the only part of the Way which can reasonably be imagined to state or argue for a monistic thesis.

The lines are **156**. 34–41. According to Aristotle:

Believing that what is not is nothing apart from what is, of necessity he [sc. Parmenides] thinks that what is is one and there is nothing else (**165: Met** 986b29=**28 A 24**; cf. 100a32).

Aristotle’s remark is duly repeated by Theophrastus, Eudemus, and the doxography (see Simplicius, **A 28**). Its source, I think, is 156. 36b–37a: ‘for nothing is or will be other than what is’. If that is so, Aristotle does not report an argument for monism independent of anything in **156**, but he does give a monistic interpretation of two difficult lines.

The first thing to observe is that lines 36b–37a occur in the middle of an argument; they give neither the premiss nor the conclusion of the section. If they are intended as Parmenides’ main statement of monism, they are placed in a strangely inconspicuous position. Second, note that the text of line 36b is corrupt. I have translated the generally

accepted emendation; but I have no confidence in it, and I am strongly inclined to think that we do not even know what words Parmenides used at this critical point in his argument.

Still, the general drift of lines 34–41 is perhaps clear enough: ‘Whatever exists is whole and motionless (line 38); hence nothing exists apart from what is (lines 36b–37a); hence there can be no thought apart from what is (line 35); hence thinking and thinking that something exists are the same (line 34); hence mortal language, which continually implies that things do not exist, cannot convey thoughts but is mere verbiage (lines 39–41).’

The premiss of the argument derives from lines 22–5 and 26–33, which attempt to prove that what is is continuous and motionless. How does that support the inference that ‘nothing is or will be other than what is’? The thought, I take it, is this: what now exists is continuous—hence there is no room for there to be anything now apart from what now exists; and what now exists is motionless—hence there is no way in which present conditions might change and allow the insinuation of something other than what now exists.

The rest of the argument can be reconstructed on that base. For, given that the only things there are or ever will be are presently existing things, ‘not without what is...will you find thinking’.<sup>10</sup> If anyone thinks, he thinks of something; everything now exists: hence if anyone thinks, he thinks of something now existing. That deals with line 35. Next, line 34: sense and syntax are hotly disputed; and only the argumentative context can provide a solution to the disputes: whatever it means, line 34 must be a plausible intermediary between 35 and 39–41. If line 34 is translated as I have translated it, viz. ‘And the same thing are to think and a thought that it is’, then a reasonable thesis can be extracted from it. ‘The same thing’ must be read loosely: Parmenides is not asserting the absurd proposition that the *only* thinkable items have the form ‘*O* exists’; nor need he be asserting that every thought has, as one of its explicit components, some item of that form. A charitable construction will allow him the more modest claim that any thinkable item carries an implicit rider of the form ‘*O* exists’. Thus construed, line 34 is plausible inference from line 35; and from line 34 we can infer the contents of 39–41; for if every thought implies ‘*O* exists’, then those mortal utterances which imply the contradictory—‘*O* does not exist’—cannot be deemed to carry coherent thoughts at all; they are ‘a name’, mere verbiage, unbacked by any intelligible content.<sup>11</sup>

Lines 34–41 do not introduce any new matter into the Way of Truth; and if those scholars who see them as a mere summary of what has already been said are not exactly right, the kernel of their claim is acceptable. If 34–41 import nothing new, they do not import the novel thesis of monism. And in fact my reconstruction gives no plausibility to the suggestion that monism is asserted or argued for in lines 36b–37a. The Peripatetic interpretation could only occur to scholars desperate to find monism in Parmenides, and prepared to gaze myopically at half a dozen words, taken out of their context. The lines say that nothing does or will exist apart from what now exists: quite evidently that does not state or imply any monistic thesis. It is worth repeating that the vital lines are corrupt; but I see no possibility of introducing a monistic sentiment by emendation—monism is simply irrelevant to the context.

Was Parmenides a monist? The surviving fragments do not make him one. Since we are fairly confident of possessing the whole of the Way of Truth, I incline to believe

that Parmenides' poem was not monistic. And since we hear nothing of any Parmenidean doctrine not included in the Way of Truth, I suspect that Parmenides was not a monist. At all events, as far as our evidence goes, real monism was an invention of Melissus.

(c) *Homogeneity*

After arguing for monism, Melissus turned to homogeneity. The fragments fail us here, but their loss can be made good: **B 7** asserts and twice employs the homogeneity of the unique Melissan entity; and it implies that the homogeneity thesis (T6) was inferred from (T5). That implication is confirmed both by Simplicius' paraphrase and by the *MXG*. In the *MXG* the argument runs as follows:

And being one, it is in all respects homogeneous (*homoion*); for if it were heterogeneous (*anhomoion*), being several things it would no longer be one but many (**166:974a 12–14=A 5**).

I suppose that *homoion* means 'qualitatively uniform';<sup>12</sup> and I take it that (T6) can be written as:

(1) If  $O_1$  and  $O_2$  are parts of  $O$ , then  $O_1$  and  $O_2$  are qualitatively identical.

Melissus' argument is a *reductio*. Suppose (1) false, i.e.:

(2) For some  $P$ ,  $O_1$  has  $P$  and  $O_2$  does not have  $P$ .

Then by Leibniz' law:

(3)  $O_1 \neq O_2$ .

Since any part of an existent object must itself exist, (3) implies that more than one thing exists. And that, by (T5), is impossible.

You may scoff at that: surely  $O$  may be unique and yet have differentiated parts; for ' $O$  is unique' only makes sense if it is taken as elliptical for some proposition of the form ' $O$  is the unique  $f$ '. Number, as Frege showed us, is parasitical upon concepts: ' $O$  is one', ' $O$  and  $O$ ' 'are two', are nonsense if strictly construed; we are always obliged to ask 'One what?', 'Two what?' But if  $O$  is the unique  $f$ , that in no way rules out (3); for  $O_1$  and  $O_2$  may be a pair of  $gs$ . Moreover, if ' $O$  is unique' makes no sense, we may well ask what happens to Melissus' monism. It appears that (T5) is senseless: real monism, far from being a thesis provable inside the Eleatic system, is an unthinkable confusion.

The generous reader will run to Melissus' aid:  $O$ , after all, is not completely uncharacterized—it is, essentially, existent. Real monism says not that  $O$  is unique, but that  $O$  is the unique entity; indeed (to anticipate some future revelations) we may take (T5) to say that  $O$  is the unique physical object. (3) will then assert that  $O_1$  and  $O_2$  are distinct entities or physical objects; and that will not consist with (T5). Melissus springs the Fregean trap.

Here we might call on Aristotle to support Frege. Aristotle insists that all counting presupposes some determinate unit (that is essentially Frege's point); and he adds that the unit must be 'indivisible'. What he means is this: if we are to count  $fs$ , then no part of an  $f$  may itself be an  $f$ ;  $fs$  must be indivisible *into*  $fs$ . Thus we can count horses, for parts of horses are not horses; but we cannot count horse-parts, for parts of horse-parts

are horse-parts. We can count hands, but we cannot count lumps of flesh; we can count tables and chairs, mice and men; but we cannot count physical objects, or things, or entities.

That view of Aristotle's is, I think, true. You cannot count 'homoiomerous' things because in their case there is no determinate answer to the question: How many  $f$ s are there? and there is no unique way of counting  $f$ s. If I point to the sea and ask how many bits of water you observe, my question has no answer; the sea is divisible into arbitrarily many bits: there are  $n$  gallons,  $m$  thimblesful,  $k$  barrels—but there is no number of bits. Similarly, you cannot say how many parts of the body there are, or how many lumps of flesh make up a mouse. (Convention does allow us to give sense to some questions of this sort: there is, in equestrian circles, a fixed number of 'points of the horse'; and if you show me five oranges and ask me how many orange things I see, you expect the answer 'five'. But that does not defeat the Aristotelian claim.)

Thus if the Fregean objection shows that real monism cannot be expressed by the formula ' $O$  is unique', the Aristotelian objection rules out ' $O$  is the unique entity or physical object'.

There is no appropriate  $f$  which will allow Melissus to state his thesis as ' $O$  is the unique  $f$ '. Candidate terms that escape the Aristotelian objection are too specific to be interesting: it is a boring falsehood that there is at most one horse, a boring truth that there is at most one phoenix. Instead, Melissus might try something like:

(4) For every  $f$ :  $O$  is the unique  $f$ ,

where  $f$  is restricted to terms of the appropriate countable sort. But

(4) will not do; for it implies the absurdity that for every  $f$ ,  $O$  is an  $f$

Nor will an existentially quantified analogue to (4) fare any better. A more complicated formula is required:

(5) For some  $f$ :  $O$  is the unique  $f$  and everything that exists is the same  $f$  as  $O$ .

Is (5) strong enough to state monism? Might there not be one or more  $g$ s in addition to the unique  $f$ ? Suppose that  $O$  is the unique  $f$ , and that  $O'$  is a  $g$ . Then by (5)  $O'$  is an  $f$  and the same  $f$  as  $O$ . But then  $O$  is surely a  $g$ , and the same  $g$  as  $O'$ ? That argument may be sound; but it is controversial. In any case, it is needlessly sophisticated; for by (T3) and (T4),  $O'$  and  $O$  share the same spatio-temporal co-ordinates; in such circumstances, I do not see how we could have any reason to say that  $O$  is the same  $f$  as  $O'$  but a different  $g$ , given that  $O'$  is a  $g$ .

Then let (5) stand as the revised and fortified version of monism. Can we argue from (5) to any form of (T6)? Does monism entail homogeneity? Suppose that (2) holds; then (3) follows, and  $O_1$  is not the same  $f$  as  $O_2$ . But by (5)  $O_1$  is the same  $f$  as  $O$ , and so is  $O_2$ . Hence  $O_1$  is the same  $f$  as  $O_2$ , the *reductio* goes through, and (T6) is established.

The trouble with Melissus' argument is strength, not weakness: it threatens to prove far too much. For the *reductio*, it seems, will work against the supposition that  $O$  has homogeneous parts as well as against the assumption of heterogeneity. It is partition, not heterogeneity, into which the argument fastens its teeth: we need only suppose that  $O_1$  and  $O_2$  are distinct parts of  $O$  to generate the contradiction. Then is the one Melissan entity partless, though infinite? At this point a notorious fragment clamours for consideration: since, however, a full discussion of that fragment, **B 9**, must wait on an account of **B 7**, I shall add a touch of suspense to the Melissan saga and postpone further probing of parts and partlessness until a later section.

(d) *Wholeness*

What of Parmenides? He asserts that what is is *homoion* (it is ‘all alike’: **156**. 22); and it is usually supposed that he was the first mover of (T6): homogeneity, like monism, is normally ascribed to the grand originator of Eleaticism. If Parmenides advanced (T6) then he did so either in lines 22–5 or else in the formally similar passage at lines 44–8. I have already offered some thoughts on the latter passage; and unless I am very much mistaken, there is no whiff of (T6) there: ‘existential homogeneity’, as I called it, by no means implies qualitative homogeneity. What then of lines 22–5?

The word ‘whole’ does not occur in 22–5; but it is scarcely to be doubted that ‘continuous’ (*suneches*) in line 25 answers to ‘whole’ (*oulon*) in the prospectus, line 4. What sort of ‘wholeness’ or ‘continuity’ Parmenides has in mind is less easy to settle. The orthodox view has Parmenides arguing for the spatial continuity of what is: *O* cannot be discontinuous, in the way in which a pack of cards or the United States of America is discontinuous; all its parts must be in spatial contact with one another. The language of the lines has been thought to impose that interpretation; and the lines do contain terms whose primary sense is spatial. But spatial terms are readily used with a temporal reference; and I do not think that Parmenides’ language suffices in itself to rule out a temporal interpretation: *O* is certainly continuous in a temporal sense (unlike, say, a symphony that may have gaps between its movements) and temporal wholeness may be the message of 22–5. To decide on the sense of Parmenides’ conclusion we must look first at the course of his argument. I quote the lines again:

Nor is it divided, since it is all alike  
and neither more here (which would prevent it from holding together)  
nor less, but it is all full of what is.  
Hence it is continuous; for what is neighbours what is.

The orthodox punctuation puts a heavy stop at the end of line 22, giving three separate tracts of argument: line 22, lines 23–4, line 25. In line 22 we then have the unsupported premiss that ‘it is all alike’. Thus isolated, the phrase must be taken in the Melissan sense: ‘it is qualitatively homogeneous’. But its presence is jarring: nothing in the earlier part of **156** suggests it, and we are left to suppose that Parmenides brazenly helps himself to a premiss to which he has no possible claim. But the orthodox punctuation is not sacrosanct: instead of a stop at the end of line 22, let us place a comma or indeed no punctuation mark at all;<sup>13</sup> 22b still expresses a premiss of Parmenides’ argument, but that obscure expression is expanded and explained in lines 23–4. So construed, the structure of the section is this: *probandum* (22a); premiss (22b–24); restatement of conclusion (25a); intermediate step (25b). The logic is clear; and there is some hope that from 22b–24 we shall be able to drag out a proposition to which Parmenides is entitled. That, at any rate, is the supposition on which my translation and the following exegesis depend.

In 22a the *probandum* says: ‘Nor is it *diaireton*’. Translators usually render this ‘divisible’; and many scholars talk of ‘theoretical indivisibility’: *O* is not just undivided, it is not, even in theory, divisible into parts. But *diaireton* in 22a must be understood by way of *suneches* in 25a; for ‘it is *suneches*’ restates the conclusion of these four brief

lines. And *suneches* ('continuous') does not imply indivisibility: the Mediterranean is *suneches*, but it is theoretically divided in atlases, and a cunning engineer might divide it physically by a causeway. In 22–5 Parmenides commits himself only to the view that *O* contains no gaps, not to the stronger view that gaps cannot be made in it, and still less to the very strong view that it does not admit of 'division in thought'.

The premiss for this conclusion is that 'it is all alike'; and the sense of that phrase is given by the gloss: '...neither more here...nor less'. The commentators think here, as they think at lines 44–5, of 'degrees of being': existence is not spread unevenly over *O*, like the butter on my morning slice of toast. But I cannot see how an uneven spread of existence would prevent it from holding together (*sunechesthai*, i.e., being *suneches*)—the butter on my toast is uneven but continuous. And I guess that Parmenides has a simpler thought in mind: 'If you take any two stretches of *O*, you will not find more existence in one than in the other. It is "all full of what is", "what is neighbours what is": at every point in every stretch of *O*, *O* exists; and thus *O* is indeed without gaps, continuous, undivided.'

Are the 'stretches' of *O* spatial or temporal? There is one strong argument against the spatial orthodoxy: lines 44–9 attempt to establish the spatial continuity of Parmenidean entities, and a brief but complete anticipation of that argument in 22–5 would be pointless, to say the least. On the other side, four short lines drawing an evident corollary of the denial of generation and destruction are apposite and intelligible: if *O* cannot be generated or destroyed (lines 5–21), then clearly it cannot have temporal gaps; the corollary is easily and appropriately drawn in lines 22–5.

There is an objection to the heterodox temporal interpretation: if Parmenides' entities are punctual, then how could he refer in 22–5 to temporal stretches in their careers? How can 'what is neighbour what is' in time, if whatever is is only now? Why did Parmenides not simply say: 'It is not temporally divisible, because it exists only now, and "now" is logically indivisible'? We might, I suppose, read my references to 'stretches' in *O*'s career in a counterfactual way: 'if there *were* two temporal stretches in *O*'s career, neither *could* "contain more existence" than the other'; and we might conjecture that Parmenides chose this way of demonstrating *O*'s temporal continuity because he preferred to rest his argument on the fundamental and well understood notion of ungenerability rather than on its slippery partner, punctuality. After all, lines 22–5 *do* establish temporal continuity, given lines 5–2: the objection we are considering is merely that they do not do that in the most economical and telling fashion. But any reader who refrains from believing that explanation has my sympathy; and I readily concede that my interpretations of 5–21 and 22–5 do not unite in whole-hearted amity. If, for all that, I stick by them, it is because alternative interpretations seem to me to be still less congruous: again, I do not think that Parmenides—the first student of metaphysics—has fully grasped the implications of his own thoughts.

Lines 22–5 do not, I conclude, either argue for or state (T6); and I infer that Melissus was the first to maintain the thesis of homogeneity. For all that **156** says, Parmenidean entities may be qualitatively variegated.

As an appendix to this section, here is a further fragment of Parmenides:

Regard alike firmly in your mind things absent, things present; for you will not cut off what is from holding to what is, neither scattering

everywhere in every way through the world, nor gathering together  
(167:28 B 4).

This is an utterly baffling quotation: its first line is, in the Greek, multiply ambiguous;<sup>14</sup> its position in Parmenides' poem defies determination.

The first line seems to envisage a plural world; and that has led some scholars to place **167** in the Way of Opinion. I do not accept the inference; but the conclusion is tempting. Simplicius, after all, implies that **156** represents the whole of the Way of Truth, and **156** cannot accommodate **167**. On the other hand, the content of **167**—to put the matter vaguely—smacks of Truth; and it has been cleverly suggested that **167** formed a tailpiece to the Way of Opinion: 'So much for the Way of Opinion: do not be misled along it, but "regard alike..."'.<sup>15</sup> If that suggestion is correct, what sense does **167** have?

The argument runs thus: '(i) What is can neither scatter nor coalesce; hence (ii) what is always holds to what is; hence (iii) you should regard absent and present alike.' Now (i) follows from the motionlessness of what is; Parmenides has argued for that in lines 26–33, and we may reasonably be expected to apply the moral in **167**. Next, (ii) will follow from (i) on the supposition that at the present 'what is holds to what is'; and that supposition can be found either in line 25 (on a spatial reading of 22–5) or else in lines 42–9. This reading of (ii) has consequences for (iii): 'present' and 'absent' must refer to spatially present and absent parts of *O*, not to temporal presence or absence, and not to a plurality of individuals. For the inference from (ii) to (iii) must run: 'Since there can never be spatial gaps in *O*, you may safely treat present and absent bits of *O* alike'. And the underlying thought is merely this: no bits of *O* are non-existent; so you will run no danger of pseudo-thought by thinking of any bit of *O*, however remote.

**167** on this interpretation is not peculiarly interesting or novel; but novelty is not wanted at the end of a poem. It is worth pointing out that my reading of **167** to some extent confirms my remarks about divisibility in line 22:**167** allows that *O* has parts that are at least notionally distinct; it denies that those parts may become physically separated from one another.

#### (e) *Change and decay*

It was the Eleatic denial of change and motion which most troubled the philosophical and scientific world of the fifth century: generation and destruction the later scientists felt they could dispense with; sempiternity, too, could be accommodated to their designs, and monism was not perhaps felt as a very serious or persuasive thesis. But without change, and without locomotion, science was at a stand; and we shall see, in the later attempts to escape from the logical clutches of Elea, that the rehabilitation of locomotion, and with it of change, was the central and vital issue.

On this topic Parmenides, again, is dismally obscure; and I shall not look at his remarks on change and motion until I have examined Melissus' relatively clear and intelligible contribution. The theses in question are (T7)—(T12); they occupy the first part of **30 B 7**. That long fragment reads thus:

[i] In this way, then, it is eternal and infinite and one and all homogeneous. And [ii] it will not perish,<sup>16</sup> nor become greater, nor be rearranged, nor suffer pain, nor suffer anguish. For [iii] if it underwent any of these, it would no longer be one. For [iv] if it alters (*heteroioutai*), it is necessary that what is is not homogeneous, but that what was earlier perishes and what is not comes into being. Again, [v] if it were to become different (*heteroion*) by a single hair in ten thousand years, it will all perish in the whole of time.

But [vi] neither is it accomplishable that it be rearranged (*metakosmêthênal*); for [vii] the arrangement (*kosmos*) which was earlier is not destroyed, nor is that which does not exist generated. And [viii] since nothing is added or destroyed or alters, how might anything that is be rearranged?<sup>17</sup> For [ix] if it were to become different in any respect, it would thereby be rearranged. Nor [x] does it suffer pain. For [xi] it would not be altogether if it were in pain; for [xii] a thing in pain could not be always, [xiii] Nor does it have equal power with what is healthy, [xiv] Nor would it be homogeneous if it were in pain; for [xv] it would be in pain in virtue of something's passing from it or being added to it, and it would no longer be homogeneous, [xvi] Nor could what is healthy be in pain; for [xvii] what is would perish,<sup>18</sup> and what is not would come into being, [xviii] And about anguish there is the same argument as for being in pain.

Nor [xix] is it empty (*keneon*) in any respect; for [xx] what is empty is nothing, and it will not be nothing. Nor [xxi] does it move; for [xxii] it has no way to retreat, but it is full. For [xxiii] if it were empty, it would retreat into what was empty; but not being empty, it has not any way where it may retreat. And [xxiv] it will not be dense and rare. For [xxv] it is not accomplishable that what is rare is as full as what is dense, but what is rare thereby becomes emptier than what is dense. And [xxvi] one must make this distinction between what is full and what is not full: if it yields at all or receives, it is not full; and if it neither yields nor receives, it is full, [xxvii] Now it is necessary for it to be full, if it is not empty; and if it is full, it does not move (168).

Sentence [i] restates, without further argument, (T2), (T4), (T5) and (T6). Sentences [vii]–[xviii] are curiously convoluted, and I shall not attempt to unravel all their complexities.<sup>19</sup> Sentence [ii] asserts (T8)–(T12). [iii] supports this by observing that the negation of any of (T8)–(T12) entails the negation of (T5); and [iv] supports *this* by claiming that the negation of (T7) entails the negation of (T6). Thus: (T5) gives (T6); (T6) gives (T7); and (T7) gives each of (T8)–(T12). Monism gives homogeneity; homogeneity gives unalterability; and unalterability rules out destruction, growth, rearrangement, pain, and anguish.

I have already discussed the first of those inferences; and I suppose that a suitably generous understanding of 'alter' (*heteroiousthai*) will validate the third. The second inference may surprise: why, after all, should *O* not change from one homogeneous state to another? from being wholly red, say, to being wholly blue? Provided that the

change occurred uniformly there would be no instant at which *O* was not homogeneous. But that reflection misses the full force of Melissus' argument for homogeneity: *O*<sub>1</sub> and *O*<sub>2</sub> were taken as 'parts' of *O*; but 'part' is not to be construed in a narrowly spatial sense: any spatio-temporal chunk of *O* will count as a 'part'. (If *O* is three-dimensional, then 'parts' of *O* are given by five co-ordinates, three spatial and two temporal.) As far as I can see, that gloss on 'part' does not affect Melissus' argument for (T6); and it renders immediately valid his inference from (T6) to unalterability (T7).

Sentence [iv] contains, however, a hint at a different argument for (T7). The hint lies in the phrase: 'what was earlier perishes, and what is not comes into being'. It is taken up again in [vii]; and it is important because it allows (T7) to by-pass (T5) and (T6), and to rest upon (T1) alone. Thus the denial of change need not depend upon monism. I turn, therefore, to [vii], remarking incidentally that sentence [v] is unintelligible to me.<sup>20</sup>

The sentence restricts itself to (T10), the denial of rearrangement;<sup>21</sup> and the full significance of (T10) will become clear at a later stage. The argument of [vii] turns on the following principle:

(1) If *O* is rearranged at *t*, then at *t* *O*'s earlier arrangement is destroyed and *O*'s later arrangement comes into being.

Hence, since nothing can be destroyed or come into being, (T10) is established. As it stands, the argument makes use of (T8), the denial of destruction; and since (T8), in Melissus, is only established by way of (T5), (T10) is still, strictly speaking, dependent upon monism. But that dependence is easily broken. Replace (1) by:

(2) If *O* is rearranged at *t*, then at *t* *O*'s later arrangement comes into being.

To get (T10) from (2) only (T1) is required: in brief, ungenerability rules out rearrangement.

The argument can be generalized: if *O* changes colour at *t*, then at *t* *O*'s new colour comes into being; if *O* changes size at *t*, then at *t* *O*'s new size comes into being. Generally:

(3) For any *F*: if *O* becomes *F* at *t*, then *O*'s *F*ness comes into being at *t*. Proposition (2) is a special case of (3); the phrase 'what is not comes into being' in [iv] points to a second case of (3); and in [xvii] there is something very close to a general statement of (3). Thus I do not hesitate to infer that some general principle such as (3) was in Melissus' mind.

The strength of (3) is great. In effect, (3) reduces all change to generation: every sentence of the form '*O* becomes *F*' implies some sentence of the form '*O* comes into being'. But no sentence of the form '*O* comes into being' can express a truth; hence no sentence of the form '*O* becomes *F*' can express a truth—since generation is extinguished, change cannot light our scientific path. And (3) is surely true: what does '*O*'s *F*ness comes into being' mean if it does not mean '*O* becomes *F*'? Unless we rule out phrases like '*O*'s *F*ness' as ill-formed—a desperate and unconvincing stratagem—we are bound to concede that (3) is true.

Melissus has forged a powerful argument: from (T1) he can validly infer (T7), by way of (3); and (3) is true. If generation goes, then so does change of every sort. The value of his argument was never appreciated by Melissus' successors: they attempted to hold on to (T1) while rejecting (T7); yet they say nothing of (3). Aristotle, who despised Melissus and prided himself on his overthrow of the Eleatic arguments, nowhere faces

up to (3). I do not wish to suggest that Melissus' argument is impregnable; but at this stage I leave it in control of the field—it deserves to enjoy at least a temporary victory.

The next sentences of **168** are curiosities. They attempt to establish that *O* is free from pain and free from anguish: (T11) and (T12). It is hard to believe that Melissus would have invented those strange theses off his own bat; yet scholars have unearthed no suitable opponent against whom they may have been enunciated. Again, what moral are (T11) and (T12) intended to suggest? Is Melissus denying the sensitivity of *O*, and implicitly rejecting an animate or divine being? For 'he used to say that one should say nothing about the gods; for there is no knowledge of them' (Diogenes Laertius, IX.24=A 1). Or is he rather affirming the sensitivity of *O*, and hence implicitly its bliss and divinity? For according to other sources he made 'the One' a god (Aëtius, Olympiodorus, A 13). Or are (T11) and (T12) jokes?

(T11) is argued for in sentences [xi]–[xvii]. The structure of the passage is not clear to me. [xi]–[xii], I take it, rule out the possibility that *O* is permanently in pain: if *O* were in pain throughout its career, it would not 'be altogether' (*pan*: see p. 195), i.e., it would not exist for ever. I suppose that some fairly crude thought lies behind the argument: perhaps it is that pain weakens the sufferer, and in time will therefore destroy him. Sentences [xvi]–[xvii] rule out the possibility that *O* is sometimes in pain: *O* cannot pass from a healthy to a painful state; for *O* cannot change at all. Proposition (3) lies behind the argument. [xiv]–[xv] seem to have a more general scope: Melissus' point is that '*O* is in pain' implies '*O* is altering', for pain consists in the addition to or subtraction from the substance of the sufferer. There is presumably some sort of physiological theory behind this. Finally, sentence [xiii] is puzzling. Conceivably, it argues against the suggestion that *O* is both in pain and healthy, all the time, but in different parts of itself. Pain and health, Melissus avers, could not coexist in harmonious equilibrium as that suggestion requires; physiology, again, must be in the offing.

The argument in the first half of **168** is not set out with perfect grace; and parts of the paragraph are given over to Christmas-cracker philosophizing. That may explain the neglect of **168** in modern discussions of the Eleatic stand on change. At the risk of tedium, let me briefly restate the case: of all the Eleatic theses, (T7) and its companions are the most important; and of all the Eleatic theses, (T7) has the strongest support; for through the garish curtains of **168** there appears a fairy godmother of an argument: a touch of (3), and (T1) is magicked into (T7).

#### (f) *The void*

The remainder of **168** is concerned with local motion or change in place. In these paragraphs Melissus offers an argument which I think is original to him. The argument proved to be one of the most controversial in the history of philosophy, and indeed of physics. For the next two millennia every student of motion was obliged to take account of it; and the critics and defenders of Melissus' opinion are roughly equal both in numbers and in gravity. The logical articulation of the passage is given in [xxvii]: from (T13), absence of void, we get (T14), 'fullness'; and from (T14) there follows the denial of motion, (T15). The sentences about 'dense and rare', constituting (T16), muddy the waters of the argument.

We start, then, with ‘the void’. Sentences [xix]–[xx] are standardly translated as follows: ‘Nor is anything empty; for what is empty is nothing; so nothing will not be’. The particle ‘so’ (*oun*) is logical nonsense; the grammar of the third sentence strongly suggests the Polyphemus fallacy of construing ‘nothing’ as a singular term (Odysseus tricked Polyphemus by giving his name as ‘No one’: the blinded Polyphemus then bellowed to his friends, ‘No one has hurt me’); and the first sentence fits uneasily into the run of Eleatic theses, all of which have the form ‘*O* is *F*’. My translation<sup>22</sup> avoids all three difficulties, and yields the following argument:

(1) *O* is not nothing [sc. in any respect].

(2) What is empty is nothing.

Hence:

(T13) *O* is not empty [sc. in any respect].

Since ‘nothing’ is here, as often, used as a synonym of ‘non-existent’,

(1) restates the Melissan axiom (A), with the tacit rider ‘in any respect’. But (2) is a new and not a universally accepted proposition. That an object cannot have non-existent parts—be non-existent in some respect—seems evident enough; but does it follow that an object cannot have *vacuous* or empty parts? After all, a vacuum is an essential part of a vacuum flask. Part of the space occupied by my flask is empty; hence a part of my flask is vacuous—my flask is ‘empty in some respect’.

That is a bad argument; and Melissus is right. His entity, *O*, is an occupant of space, an extended body. Let the volume of space *O* occupies be  $V_0$ . Now, trivially, every part of a volume of space occupied by an object is occupied by a part of that object. Suppose, then, that *O* is empty in some respect. That is to say, suppose that some part of  $V_0$  is not occupied by any body at all. Then that part is not occupied by any part of *O*. And hence  $V_0$  is not the volume occupied by *O*. But by hypothesis  $V_0$  is the volume occupied by *O*. The vacuum in my flask is not a part of my flask any more than the water in a bucket is a part of the bucket.

I conclude for Melissus. Moreover, from (T13) we can quickly infer the complete absence of void from the world. By (T4), *O* is infinitely extended, or occupies every region of space; by (T13) no part of *O* is vacant: hence no part of space is vacant, and ‘the void does not exist’. This strong thesis is, of course, essential to Melissus’ argument against motion; and that, I suspect, is why sentence [xix] receives the translation it ordinarily gets. But the strong thesis is easily and obviously inferred, given the translation which I have adopted.

In [xxvii] Melissus indicates that (T15) follows from (T13) by way of (T14); and that, as we shall see, is not a casual hint. In [xxi]–[xxiii], however, (T14) is ignored; and the canonical Eleatic argument against motion, in its standard presentation, derives (T15) directly from (T13). For the moment I shall follow this tradition, postponing discussion of (T14) to the following section.

The argument for (T15) is sublimely simple: ‘not being empty, it has not any way where it may retreat’;<sup>23</sup> *O*, or parts of *O*, can move only if they have room for manoeuvre, and a full universe leaves no room at all. Locomotion is change of place, the transition from one locale to another. If an object moves, then it comes to occupy a new place; and that new place, prior to receiving its occupant, must be empty. Thus the general principle licensing the inference from (T13) to (T15) is something of the following sort:

(3) If  $O$  comes to occupy place  $p$  at time  $t$ , then immediately prior to  $t$   $p$  is empty.

The principle has considerable plausibility; and Melissus may have taken it for self-evident: if  $p$  is occupied up to  $t$ , then  $O$  cannot get into it; for two things cannot occupy the same place at the same time. To make any headway,  $O$ 's nose must be pointed at a vacuum: the parts of a rigid, close-packed, body do not and cannot move; for they leave no vacancies about them into which they can insert themselves.

Evidently, there are answers to that argument; and Melissus cannot be granted (3), or (T15), without more ado. Some at least of his successors exercised their ingenuities over (3) and proposed alternatives to it which apparently permit locomotion inside a *plenum*. I shall look at those proposals in their later historical setting and I shall not anticipate them here: for the extent of this chapter, let Melissus hold the field; his argument will shortly be reinforced by Zeno.

Before I turn to Parmenides' thoughts on motion and change, let me get Melissus' (T17) out of the way:  $O$  is not divided up. Fragment **B 10** reads:

If what is has been divided (*dieirêtai*), it moves; but moving it would not be (**169**).<sup>24</sup>

The fragment infers from (T15) some denial of division. Simplicius (*ad B 10*) thinks that 'it has been divided' means 'it is divisible'; but the Greek will hardly bear that construction. Comparison with **167** suggests a different gloss: 'Since it cannot move, it cannot be split up into bits'. The argument is correct, and we may expect Melissus to have assented to it; but the past tense, 'it *has been* divided', is not explicable. A third suggestion wonders if ' $O$  has been divided' is supposed to entail that some parts of  $O$  are not in contact with one another. Then those parts are separated by a void; so  $O$  is in some respect empty, and 'if it were empty, it would retreat into what was empty'. I incline to think this the most probable interpretation of **169**; but I cannot say why Melissus should have decided to argue for (T17). However that may be, **169** introduces us to no new items of Melissan philosophy.

In **156**. 26–33 Parmenides attempts to show that what exists is *akinêton*, motionless:

And motionless in the limits of great chains  
it is, beginningless, endless; since coming into being  
and destruction  
have wandered far away, and true trust has driven them off.  
And the same, remaining in the same state, it lies in itself  
and thus firmly remains there. For a strong necessity  
holds it in chains of a limit which fences it about,  
because it is not right for what is to be incomplete;  
for it is not lacking—otherwise it would want everything.

Lines 26–8 mean: 'since  $O$  cannot come into being or be destroyed, it is *akinêton*. 'Kinêsis' in philosophical Greek regularly carries wider connotations than 'motion' in English: it covers any form of change—alteration and change of size as well as

locomotion. Line 41, which refers to locomotion and alteration as empty ‘names’, implies that Parmenides has rejected both locomotion and alteration; and the only passage where he might think to have done that is lines 26–33. Thus *akinêton* in line 26 rejects all forms of change. Lines 29–30a confirm that conclusion; for the words ‘the same’ contain a rejection of alteration; and ‘firmly remains there’ deny locomotion, (‘remaining in the same state (*en tautôt*)’ may refer either to alteration or to locomotion (see p. 322, n. 21). ‘it lies in itself presumably means ‘it stays in the one place it occupies’.) I believe, too, that the prospectus prepares us for this combined treatment of alteration and locomotion: ‘of one kind and motionless (*mounogenes te kai atremes*)’ means ‘unalterable and immobile’. *Akinêton* in line 26 thus denies both change and locomotion.

Being immobile, what is remains ‘in the limits of great chains’ Modern scholars take ‘limits’ and ‘chains’ in lines 26 and 31 in a metaphorical sense: Parmenides has logical chains in mind; ‘*O* is motionless in the limits of chains’ means simply ‘as a matter of necessity, *O* is motionless’. That is hard to believe: first, the phrase ‘strong necessity’ (line 30) gives, non-metaphorically, the sense of *a priori* immobility. Second, the literal sense of ‘limits’ is wholly appropriate: if *O* is immobile, what more natural than to infer that it stays forever within the spatial limits given by its original position? The point is not wholly niggling: as we have already seen, an important issue in the interpretation of lines 42–9 turns on the reading of the word ‘limit’ (above, p. 203).

One final point before advancing to the argument of the lines: if *O* has a purely punctual existence, how can it be said to ‘remain’ in limits? Remaining implies endurance; and *O* has no duration. The question is essentially the same as one raised earlier in connexion with 167 (above, p. 212). And again there are two answers: first, it is easy to suggest that Parmenides had not got the hang of his own punctuality thesis, and failed to see that although it does imply immobility, it is incompatible with an enduring immobility or ‘remaining’. Second, we might gloss ‘it remains at *p*’ by ‘For all *t*, if *O* exists at *t*, then at *t* *O* is at *p*’; and thus, at the price of a certain sophisticated artificiality, punctuality and ‘remaining’ are formally reconciled. I do not offer this second answer as an account of what Parmenides ‘really thought’; I offer it to show that the objection to his using the verb ‘remain’ (*menein*) is a quibble.

Lines 26–33 contain two distinct arguments. The first occupies 26–28; it consists in the simple formula: ‘No generation or destruction, so no *kinêsis*’. There is more than one way of expanding that into an argument, and I cannot see any internal evidence that points clearly in any particular direction. I surmise that Melissus’ main argument against change, expressed in 168, was intended as an elucidation of these brief lines; I do not intend to improve upon Melissus—though if he was offering his own argument to Parmenides he was a charitable man.

The second argument occupies lines 30b–33. Some scholars see no argument against motion here: they translate *houneken* (‘because’) in line 32 by ‘wherefore’ and find a self-contained piece of argumentation in lines 32–3.<sup>25</sup> I cannot understand ‘wherefore’ here; and in any case ‘because’ is linguistically preferable as a translation of *houneken*. With that translation Parmenides presents us with an argument for motionlessness starting from the premiss:

(4) If *O* is lacking, *O* wants everything.

Hence he infers:

- (5) *O* is not lacking;  
 whence:  
 (6) *O* is not incomplete,  
 and so to ‘*O* is motionless’.

I find the argument baffling; and the text of line 33, from which the premiss (4) is drawn, is uncertainly transmitted and of uncertain sense.<sup>26</sup> Some scholars discover Melissus’ canonical argument, supposing that Parmenides infers immobility from the lack of a void. The key to their interpretation is the construe of (5) as ‘no space is not occupied by *O*’, i.e., ‘there is no vacuum’. (4) then means ‘if there were a vacuum, *O* would occupy no space at all’; and the premiss which allows us to infer (5) from (4) is the proposition that *O* is a space occupier. It is hard to believe all that: it requires great faith to find any statement about vacuums in (5);<sup>27</sup> and why ever should Parmenides offer us (4)? What, again, is the function of (6)? Had Parmenides wanted to give the Melissan argument, he had the linguistic means at his disposal; I cannot believe that he would have disguised his intentions as thoroughly as this interpretation supposes.

I suspect that the argument has an element of teleology in it: ‘If *O* moves—*kineitai* in the broadest sense—that could only be because *O* had not achieved some end or goal (was ‘incomplete’); and that would only be true if *O* lacked something. But if it lacked anything it would lack everything. (Why? Perhaps the Principle of Sufficient Reason lurks behind the text: all of *O*’s properties are on a par—if it lacked a property  $P_1$ , then it would lack  $P_2$  and  $P_3$ , and everything else.) But that is an absurd supposition, for it would make *O* into a propertyless non-thing. ‘That interpretation is perhaps preferable to the Melissan one; yet it hardly presents Parmenides with a decent argument, and I do not believe I know what he is saying in lines 32–3.

Once again, Melissus seems to me to be Parmenides’ superior: in **156**. 26–33 little is clear and nothing is explicit and detailed; if those lines were all that Elea could muster in support of its case against *kinêsis*, then that case would not deserve a hearing. Melissus, on the contrary, presents reasonably lucid and relatively detailed arguments; and from his fragments it is possible to construct, without any special pleading and with surprisingly little polishing or pruning, two very respectable arguments, one against alteration and one against locomotion.

#### (g) *Corporeal being*

Matter, according to Descartes, is three-dimensional extension and nothing more. To see this, ‘we have only to attend to our idea of some body, e.g., a stone, and remove from it whatever we know is not entailed by the very nature of body’. We ‘remove’ in this way hardness, colour, weight and temperature, and, in conclusion ‘we may now observe that absolutely no element of our idea remains, except extension in length, breadth and depth’. Matter is thus identified with space, and the identification allows Descartes to reject the possibility of a vacuum: the notion of empty space, bodiless body, is a trivial contradiction.<sup>28</sup>

The Cartesian view might well have appealed to Melissus; but it was a heterodox view and there seemed to be overwhelming objections to it: how can Descartes distinguish between a geometrical ‘solid’ and a physical ‘solid’? between a

stereometrical sphere and a rubber ball? between an area of space and that area's occupants? He cannot, yet he must: geometrical bodies have no causal powers; geometry is a static subject, yet even if geometrical objects moved, they would not effect motion in one another—they have not the body to do so. A world of moving geometrical objects is like a world of images on a cinema screen: thin, unsubstantial, powerless, immaterial.

Three-dimensionality is perhaps necessary to materiality; but it is not sufficient. What more is needed? The classical answer is: Solidity, or impenetrability. And the *locus classicus* for that answer is in Locke's *Essay*: 'This of all other, seems the *Idea* most intimately connected with, and essential to Body, so as no where else to be found or imagin'd, but only in matter: and though our Senses take no notice of it, but in masses of matter, of a bulk sufficient to cause a Sensation in us; Yet the Mind, having once got this *Idea* from such grosser sensible Bodies, traces it farther; and considers it, as well as Figure, in the minutest Particle of Matter, that can exist; and finds it inseparably inherent in Body, where-ever, or however modified. This is the *Idea* belongs to Body, whereby we conceive it to fill space. The *Idea* of which filling of space, is, That where we imagine any space taken up by a solid Substance, we conceive it so to possess it, that it excludes all other solid Substances; and, will for ever hinder any two other Bodies, that move towards one another in a strait Line, from coming to touch one another, unless it removes from between them in a Line, not parallel to that which they move in' (II.iv.1–2). Solidity, impenetrability, resistance: physical objects, or 'bodies', do not merely have spatial location; they fill or occupy space. And if *O*

fills a volume of space *V*, then *O* excludes from *V* any other physical object *O'*, so that no two things can be in the same place at the same time (cf. *Essay* II. xxvii.1). Thus by filling *V* and excluding *O'* from it, *O* 'resists' *O'* and is 'impenetrable' to it.

The Atomists grasped this notion clearly enough: atoms, they said, are solid (*stereos*), massy (*nastos*), full (*plêrês*)—they are space occupants in the strong Lockean sense (see below, p. 345). The atomists took their view from Melissus; for in (T14) he expresses for the first time the thesis that substance is solid: '*O* is full (*pleôn*)' means '*O* is a space filler' or '*O* is solid'.

At first sight, Melissus' explanation of 'fullness' in sentence [xxvi] of 168 does not suggest that gloss. More homely and familiar thoughts come to mind: a diamond, say, which neither 'yields' to pressure nor 'receives' other stuffs is 'full'; a squash ball, a wine bottle, and a loofah are not 'full'—the ball yields to the racquet, though it does not 'receive'; the bottle accepts the wine, though it does not 'yield'; the loofah both yields to the fingers and receives the bathwater. But on that account 'fullness' is an unhappy hybrid notion, compounded from hardness and non-porosity. (Locke carefully distinguishes solidity from hardness: *Essay* II.iv.4.) And in any case, the account cannot be correct. What is not full is, according to Melissus, empty, i.e. partially vacuous; and Melissus cannot have supposed that a rubber ball, an empty bottle and a dry loofah all contain vacuums. The bottle will 'receive'; but the 'received' wine displaces air, not a vacuum. The loofah will squash; but when squashed the water drips out of it.

A different account is required; and Lockean solidity is the only plausible alternative: when Melissus says that *O* is 'full', he means that it 'fills space'; when he says that *O* 'does not yield', he means that it has 'resistance'; when he says that *O* does not 'receive', he means that it is 'impenetrable'. The concept of solidity, delineated here

with astonishing clarity and accuracy, was one of Melissus' most influential and valuable bequests.

Did he bequeath a truth or a falsity? Leibniz observed, correctly, that shadows and rays of light may interpenetrate (*Nouveaux Essais*, II.xxvii.1), and the same holds for smells and for sounds.<sup>29</sup> But such things are not primary substances, or physical objects. Again, a human body and a collection of cells will occupy the same place at the same time; yet they are distinguishable physical objects. But here the cells constitute the body; and evidently the Melissan principle does not rule out the interpenetration of a body and the sum of its parts or the sum of its physical constituents.

A third potential counter-example is more interesting. Science—that unimpeachable and incomprehensible god—assures us that macroscopic physical objects are made up of a myriad atoms whirling about in a void: physical objects are not, in fact, solid; they are perforated and channelled by vacuous space. Perhaps, then, a certain correspondence and symmetry in the atomic sub-structure of physical objects might allow two bodies to interpenetrate; as an electric plug fits into a socket, so two electric plugs might fit into one another were their atoms and vacant interstices suitably arranged. Does this show that physical bodies are not essentially solid? or should we rather dissociate solidity from impenetrability so that physical objects are necessarily solid, but not necessarily impenetrable? Or is it not better still to infer that macroscopic objects are not in fact physical bodies, though they appear so to the untutored eye? The only genuinely physical objects in the world are the ultimate corpuscles of matter, microscopic objects which contain no vacancies. This third suggestion was made by the ancient Atomists; and I find it the least offensive of the three solutions. Necessarily, physical objects are solid and impenetrable; but it is a question for science to answer whether any of the macroscopic objects we daily observe are in actual fact physical objects.

However that may be, such atomist worries would not have moved Melissus; for he has already argued implicitly that atomism is false: substances contain no vacancies. From his denial of emptiness Melissus moves immediately to an assertion of fullness: 'it is necessary for it to be full if it is not empty' (sentence [xxvii]). (T14) is inferred at once from (T13): what has no vacancies is solid or impenetrable; what is in no respect empty is full—the inference seems trivial enough.

Yet is it sound? Leibniz, for one, doubted it: 'We see, for example, two shadows or rays of light which interpenetrate, and we might invent for ourselves an imaginary world wherein bodies would act in the same way' (*Nouveaux Essais* II. xxvii. 1). Such an invention does not greatly tax the imagination: we are all familiar in childhood with men who walk through walls. But the imagination is a bad judge of the impossible: if we cannot, like the White Queen, believe five impossible things before breakfast, we can surely imagine them; and Leibniz' point is not that interpenetration is imaginable but that it is logically possible. Suppose we discover a new metal, and make a pair of billiard balls from it; the balls are hard and seem solid, they do not fall through the cloth of the table or disappear into the side cushions. Place ball *a* on one side cushion at point *A*, and cue it to the opposite cushion at *A'*; place *b* on the end cushion at *B*, and cue it to the opposite cushion at *B'*. The lines *AA'* and *BB'* intersect; call the point of intersection *C*. Now replace *a* at *A* and *b* at *B*. Strike *a* and *b* in such a way that each, if unimpeded, would reach *C* at the same time, *t*. Ordinary balls would clash and be diverted from their

paths; but *a* and *b*, to the amazement of the spectators, continue through *C* to *A'* and *B'*. At *t*, then, *a* and *b* were in exactly the same place, *C*; at *t* *a* and *b* interpenetrated.

The case is imaginable: is it logically possible? I cannot show that it is; but equally I know of no argument that it is not. And the additional specification, that *a* and *b* are not 'empty in any respect', does not enable me to concoct an argument. I suppose that stories should count as logically innocent until they are proved guilty; and I therefore take the case of the curious billiard balls as setting up a *prima facie* refutation of Melissus' move from (T13) to (T14).

The matter is not indifferent to Melissus. For, contrary to the tradition which I have so far followed, Melissus' denial of motion in (T15) requires (T14) and not merely (T13): a body, *a*, may move into a location *p* even if *p* is already occupied by some other non-empty body *b*, provided that *b*, though not empty at all, is not impenetrable. Space may be, as it were, overfull: at no time is any volume of space unoccupied; but various volumes of space have several distinct occupants. Unless Melissus can establish (T14), in the strong sense of impenetrability, he cannot reach (T15). I shall, as I promised, consider objections to Melissus' argument against motion in a later chapter; but those objections are distinct from the one I have just canvassed. Nor are they otiose; for even if it is granted that (T14) does not follow logically from (T13), it may still be conceded to Melissus that if (T13) is true, then, as a matter of contingent fact, so is (T14).

From (T13) Melissus infers (T16): *O* is not 'dense or rare'. He means, of course, that *O* does not exhibit different degrees of density in its several parts. He clearly states that if *O* is rarer than *O'*, then *O* must contain more void than *O'*; and given that, his inference holds. As far as I can see, it is not a logical truth that rare bodies contain more vacancy than dense bodies; and I do not know whether or not it is a scientific truth. At any rate, Melissus does not succeed in proving (T16). He might have done better to derive it from (T6); for homogeneity presumably excludes variation in density no less than in any other property. But (T16) is not a very interesting thesis, and I shall say no more about it.<sup>30</sup>

Whatever the value of Melissus' arguments in the latter part of 168, they leave one point in no doubt: Melissus' entity, *O*, is a solid, physical body; it is 'full', a material occupant of space; and it is impenetrable, refusing to countenance any co-occupants.<sup>31</sup>

That conclusion was denied by Simplicius, who thought he could disprove it out of Melissus' own mouth:

And that he wants it to be incorporeal (*asômatos*) is shown by his saying: 'If, then, it were, it must be one; and being one, it must not have body' (170: B 9).

Elsewhere Simplicius continues his quotation:

And being one, it must not have body (*sôma*). But if it had mass (*pachos*), it would have parts, and it would no longer be one (171).<sup>32</sup>

It is worth setting the argument out explicitly. From:

(1) *X* is one,

Melissus infers:

(2) *X* has no parts.

Then to:

(3) *X* has no mass,

and finally to:

(4) *X* has no body.

It is only natural to identify *X* with *O*: then (1) is (T5); the move from (1) to (2) mirrors that from (T5) to (T6); and (4) implies that *O* is unextended—a geometrical point, perhaps.

That conclusion conflicts flatly with (T4); and those scholars, beginning with Simplicius, who consequently deny (T4) to Melissus fly in the face of the evidence.<sup>33</sup> Other scholars observe that (4) does not in fact require a purely punctual existence for *X*: *X* might be an infinitely extended geometrical solid. That conclusion fares no better: it conflicts flatly with (T14): *O* is physical, not geometrical.<sup>34</sup>

A bold answer to these difficulties rejects the identification of *X* with *O*: Simplicius wrongly took **171** to be about the Eleatic entity; in fact the fragment came from the polemical portion of Melissus' book and constitutes part of an attack upon the pluralist opponents of Elea. That there was such a portion to Melissus' work is made probable by **B 8**, which I examine in a later chapter; and **171** readily yields an argument of Zenonian stamp: 'Suppose that there are many *X*'s. Then each must be a unity; hence it can have no parts; hence it cannot be corporeal.'

There are two powerful objections to that bold answer. First, it goes against Simplicius' express assertion that **171** is about 'the One'. But Simplicius' assertion is made in order to prove a contentious point; and, as his treatment of **160** and **161** shows, he is not at his best in dealing with Melissus. Moreover, the *MXG* implies, against Simplicius, that Melissus did not say that 'the One' is incorporeal.<sup>35</sup>

Second, even if **171** appeared in a polemical context, Melissus must surely have realized how close it stood to some of his positive remarks: how could he have argued for the incorporeality of pluralist units without seeing that the same argument applied to his own Eleatic entity? Perhaps he thought that the argument did not apply to his entity *O*. After all, if *X* is identified with *O*, then the argument from (2) to (3) is dismal: from the fact that *O* is partless, in the sense of homogeneous, it does not even seem to follow that *O* is incorporeal or unextended. On the other hand, if *X* is a pluralist unit, the inference can be given a passable complexion: Melissus doubtless held that the items in a plurality must be separated from one another (cf. Aristotle, *GC* 325a5; *Phys* 213b22); perhaps he maintained that any such free-floating item must, if it were divisible, in the course of time come to be divided and so cease to be a unity: pluralist units, being inherently liable to split, must be mere partless points if they are to be unitary; such reasoning does not apply to the Eleatic One.

I do not find the suggestion delicious. But it is less unpalatable than its rivals; for unless **171** is read as a piece of polemic, Melissus is left with a downright contradiction; and unless the polemic is read in the fashion I suggest, it will not yield any remotely reasonable argument.

I end this section by observing that **171**, as a polemical fragment, sheds no light on the question of the divisibility of *O*. **169**, as I have already observed, talks of being divided, not of being divisible. What, then, of the puzzle raised by Melissus' argument

for (T6)? Did he go on to say that *O* is not even theoretically divisible, on the grounds that if you could notionally distinguish two parts of *O* (say in terms of co-ordinates based on an arbitrarily chosen point of origin in *O*) then there would exist at least three things, *O* and its two parts? There is no evidence that Melissus did make this move; nor is there any reason why he should have done: physically distinct or physically distinguishable parts of *O* are doubtless existent individuals, and such parts must therefore be denied by a monist. But the same does not obviously hold for notionally distinguishable parts. Aristotle would have assigned to such parts only 'potential' existence; and Melissus, I suggest, might (had he ever contemplated the question) have allowed notional divisibility to *O* on the grounds that such divisibility offends neither against uniqueness nor against homogeneity.

(h) *The philosophy of Elea*

Parmenides' Way of Truth is short, and the cluster of truths, or alleged truths, along it is small. What exists is ungenerated and without destruction; it forms a continuous whole in time and space; it is changeless and does not move. Probably it has a purely instantaneous existence; probably it is a finite sphere. Melissus adds little: what exists is full, it does not have degrees of density, it is homogeneous—those theses Parmenides might have accepted. Melissus also holds, in contradiction to Parmenides, that what is is spatially infinite and temporally eternal; and he maintains a real monism, where Parmenides was prudently silent.

The Eleatic system is brief, but powerful in its implications: those few properties which Eleatic beings have are, it seems, sufficient to bar them from the field of scientific investigation, and hence to leave the scientist with nothing but his own fantasies to contemplate: in a completely stable world the laws of physics will be trivial or dull.

That is not to say that the Eleatics leave absolutely nothing to science. It is often supposed that the Way of Truth, and Melissus' amended route, are both intended to be complete, that there is nothing to be said about the world which Parmenides and Melissus have not said. There is no warrant at all for that supposition in the case of Melissus, whose fragments nowhere pretend to completeness. Parmenides' goddess does indeed offer to tell him 'everything' (28 B 1.28) and his mares escort him 'as far as desire may reach' (B 1.1); but it is implausible to read those unsystematic remarks as an explicit claim to metaphysical completeness.<sup>36</sup>

I am inclined to think that the Eleatic system is, in theory at least, extendable: further metaphysical research might add further essential properties of *to on*. (It is a plausible conjecture that Parmenides discovered the punctuality of *O* after he had ordered the rest of his deduction: surely he would wish to leave open the way to further discoveries?) Moreover, I see nothing that positively excludes the scientific and experimental discovery of contingent properties of existents. One example must suffice: *O*, according to 156. 41, cannot 'alter bright colour'. I infer that *O* has a 'bright colour', or perhaps a wash of different bright colours. Now 156 does not, and perhaps metaphysics cannot, infer the colour or colours of *O*; here, perhaps, is a little opening for scientific endeavour; and other openings, of a similar unexciting kind, are readily imagined.

It may be that this possibility is ruled out by Melissus: in **30 B 8** (below, p. 298), he lists as potential items in a plural universe 'earth and water and air and fire and iron and gold and living and dead and black and white and the other things which men say are real'. If 'black and white' are *not* real, as **B 8** implies, then perhaps *O* is neither black nor white nor any other colour: *O* has just those properties deducible from the fact that it exists; it has no contingent properties. I doubt the inference. Melissus' list divides into four groups of incompatibles; the reason is clear: if black *and* white are both real, then, since they are contraries, there must exist at least *two* things, contrary to monism. It does not follow that both black and white are unreal: Melissus could consistently allow that *O* was, say, black, and maintain the falsity of pluralism. He need not object to there being some one thing which is both gold and yellow: that does not infringe on the claims of monism; he need only object to there being both gold and iron, both yellow and grey. **B 8** is a polemical fragment, and Melissus is less explicit in certain parts of it than we might like. Nonetheless, I incline to think that he, like Parmenides, leaves open a narrow and fairly tedious path to the scientist.

I do not press these final remarks: Parmenides and Melissus were certainly not engaged in a conscious effort to point out the path of legitimate science; and it is absurd to praise them as the founding fathers of theoretical physics.<sup>37</sup> Indeed, had they observed the loopholes I have just indicated, they might, I suppose, have hastily closed them up: metaphysics will countenance no scientific tax-dodgers. My point is a gentle one: taken strictly, the surviving words of Parmenides and Melissus do not warrant the assertion that their Eleatic systems were intended to exhaust the whole well of human intellectual achievement. They could happily have encouraged further metaphysical speculation; they might not have frowned too severely upon a little elementary scientific research.