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Parmenides, Cosmology and Sufficient Reason

Abstract: Why Parmenides had a cosmology is a perennial puzzle, if, as the 'truth' part of his poem appears to claim, what exists is one, undifferentiated, timeless and unchanging.[1] Indeed, not only does the cosmological part of the poem tell us how the cosmos is arranged, it also tells us how the cosmos, humans and animals all came into being. Although more of the truth has survived, the cosmology originally made up some 2/3 to 3/4 of the poem.[2] The poem claims it will give the 'complete ordering' and Parmenides is perceived to have 'completed all the phenomena'.[3] Parmenides also seems to have made some important original contributions to cosmology.[4] These I take to be important facts which any explanation of the nature of this cosmology must account for. The aim of this paper is to explore a new suggestion for the status of the cosmology, that it may be equalled but not surpassed by other cosmologies which are capable of accounting for all of the phenomena. Its function, I argue, is to raise sufficient reason issues about some fundamental questions in cosmogony and cosmology. I will also argue that we can find sufficient reason considerations relating to cosmogony and cosmology in the truth part of the poem. This opens the possibility that it is at least in part issues of sufficient reason that link the two parts of the poem. Finally I will argue that by paying close attention to what Parmenides has to say about signs, σήματα, we can see how he leaves open the possibility of making positive contributions to cosmology. I believe this gives us a richer account of Parmenides, places him more firmly in the debates of presocratic cosmology and cosmogony and gives him

1 I refer to the three parts of the poem as the proem, truth, and opinion or cosmological parts. I avoid first, second etc. to avoid confusion as some count the truth section as the first part while others count it as the second. My thanks to audiences at the annual London Ancient Science conference, the International Association of Presocratic Studies conference in Merida and an anonymous referee for their helpful comments.

2 At least 2/3, D. Gallop, *Parmenides of Elea*. Toronto: University of Toronto Press, 1984 p. 21, J. Palmer *Parmenides and Presocratic Philosophy*. Oxford: Oxford University Press, 2009, p. 160, 80%.

3 Parmenides, Fr. 8, 60 and Plutarch, *Reply to Colotes* 1114b.

4 D. Graham (forthcoming) and D. Sedley, Parmenides and Melissus, pp. 113–133 in *The Cambridge Companion to Early Greek Philosophy*, ed. A. A. Long, Cambridge: Cambridge University Press, 1999, p. 113.

interesting relations to his predecessors and successors.[5] These sufficient reason considerations may work both as a critique of contemporary cosmogony and cosmology and a challenge to any future cosmogony and cosmology.

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I

I am not convinced by any of the older extant attempts to explain the cosmology. The view of Zeller and Burnet is that the cosmology is not Parmenides', but is a summary of some other contemporaries.[6] It has never been satisfactorily explained why Parmenides would expound someone else's view at this point, it is not clear whose cosmology this might be, and the ancients commentators all took this to be Parmenides' own cosmology.[7] A second view is akin to some older interpretations of Plato's views of the physical world, that the cosmology is the best that can be managed by mortals. If we take ἐοικότα in fragment 8, 60 as 'likely' rather than 'fitting', and look to a supposedly similar usage by Plato in the *Timaeus*, then perhaps the cosmology is the most likely account we can have, the best account of the physical world possible.[8] Apart from the philology which indicates 'fitting' is the better reading, this does not explain how it is possible for there to be a more likely cosmology within Parmenides' scheme nor, if this is possible, why this particular cosmology is more likely. A more blunt view is that cosmology is futile for Parmenides and that the cosmology given exemplifies mortal error by confusing or speaking of both existence and non-existence. Earlier in the poem (Fr. 8, 1–10) mortals are accused of this error, but it is not clear if this error is made in the cosmology. The key issue for this view must be why, if mortals make such a fundamental, immediate and debilitating error, the cosmology is so long and so detailed.

5 I will argue that Parmenides relation to his predecessors and successors is more complex than the outright rejection of 'the broad tradition of Ionian and Italian cosmology' suggested by G.E.L. Owen Eleatic Questions. *The Classical Quarterly*, 1960, pp. 84–102, esp. p. 84–5.

6 J. Burnet, *Early Greek Philosophy*. London: Black, 1930, p. 185.

7 This is so from Aristotle onwards.

8 On the issues here see J. Bryan, *Likeness and Likelihood in the Presocratics and Plato*, Cambridge, Cambridge University Press, 2011.

II

I want to begin with a close analysis of exactly how the cosmological part of Parmenides' poem is introduced. Parmenides marks the transition from the truth to the opinions of mortals by having the goddess say:

> τόν σοι ἐγὼ διάκοσμον ἐοικότα πάντα φατίζω,
> ὡς οὐ μή ποτέ τίς σε βροτῶν γνώμη παρελάσσῃ.
>
> To you this ordering, entire and fitting, I tell,
> so that no thought of mortals will overtake you.
> Parmenides, Fr. 8, 60–61.

Mourelatos has argued that the choice of *diacosmos* here is significant.[9] Rather than simply use *cosmos*, Parmenides uses a word which suggests an ordering and hence a cosmogony and which suggests too a thorough ordering. LSJ give "to divide and marshal, muster, array" for the cognate verb διακοσμέω with usages drawn from Homer and Thucydides. In Thucydides, *diacosmos* means 'battle-formation'. Mourelatos sees in this that 'The *cosmos* of mortals is actually a battlefield.'[10]

I have three points to add here. Firstly, I would emphasise that the notions of division and differentiation implicit here are significant. One cannot have an ordered cosmos of a single entity. A single army must divide itself into multiple components parts and then array itself for battle. So too for there to be a cosmos there must be a differentiation of parts. One cannot have an ordered cosmos where all the parts are identical. An army divides itself into hoplites, cavalry, command, etc.[11] It is notable that Parmenides does not describe what he argues for in the truth part of his poem as a cosmos. If it was Parmenides' intention to highlight the difference between the truth and the opinion parts of his poem, *diacosmos* was a brilliant choice of word. Thought of in terms of cosmology, it brings with it sense of change, multiplicity and differentiation which were flatly disallowed in the truth part of the poem. Thought of in terms of cosmogony, if

9 A. P. D. Mourelatos, *The Route of Parmenides*. New Haven and London, Yale University Press, 1970, p. 230, see also A. P. D. Mourelatos *The Route of Parmenides,* Revised and Expanded Edition Las Vegas: Parmenides Publishing, 2008. Here I disagree with Long (1960) p. 105 who comments that 'διάκοσμον may mean no more than κόσμος used in a technical sense.'

10 Mourelatos (1970, 2008) p. 231.

11 One might object here that we begin with one army and end with one army. Actually, that objection helps my argument. In the move from army on the march to army arrayed for battle, there must be multiplicity as the army divides for battle then unity as they form again. This gives us not only one into many, but a subsequent many into one.

we are beginning from a single, undifferentiated whole there must be a process of an initial change, of one into many and a differentiation of parts, again all flatly disallowed by the truth part of the poem. What this ought to focus us on is methodology and criteria for cosmogony and cosmology. How can this *diacosmos* be, given what Parmenides has already said? Secondly, this is what Parmenides has to say in Fragment 4:

> λεῦσσε δ' ὅμως ἀπεόντα νόωι παρεόντα βεβαίως·
> οὐ γὰρ ἀποτμήξει τὸ ἐὸν τοῦ ἐόντος ἔχεσθαι
> οὔτε σκιδνάμενον πάντηι πάντως κατὰ κόσμον
> οὔτε συνιστάμενον.
>
> Look at things which although absent, are firmly present to the mind.
> For you will not cut off what is from holding fast to what is
> it does not disperse itself in every way and everywhere according to order
> nor does it set itself together.[12]
> Parmenides, Fr. 4.

I would paraphrase lines 2–4 here like this:

2. What is is indivisible.
3. What is does not disperse in an ordered fashion.
4. What is is not an ordered collection of entities.

Line 2 I would compare with Fr. 8, 6 where what is is one and continuous (ἕν, συνεχές) and Fr. 8, 25 where what is is continuous and holds together (τῶι ξυνεχὲς πᾶν ἐστιν· ἐὸν γὰρ ἐόντι πελάζει.).

Line 3 then tells us that what is cannot be dispersed. The primary meanings of σκίδνημι are to spread, scatter or disperse and so it has a strong spatial sense to it. What is cannot form a cosmos as there are not multiple entities to disperse in an ordered fashion

Line 4 then tells us that what is is not set together, which I take to mean what is cannot be multiple separate entities set together. The verb here, συνίστημι primarily means to set together but can also mean arrange in order of battle. It is frequently used in cosmological contexts for the setting together of the cosmos or some ordered part of the cosmos.[13] What is cannot be dispersed in good order and form a cosmos and neither can it be put together in good order to form a cosmos as it lacks the separate parts that can be ordered to make a cosmos.

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12 Taking the verbs here as middles rather than passives (it is not dispersed... is not set together).

13 See e.g. Plato, *Republic* 530a, *Timaeus* 29e–32b and 92c, and there are also important uses at 36d–37e, 48a, 53b and 69b. There are also interesting uses at Plato, *Phaedrus* 268d and *Politicus* 308c. See also the use of συνίστημι in the Derveni Papyrus.

Why does Parmenides say *neither* σκιδνάμενον nor συνιστάμενον? One interesting possible contrast here is that Parmenides may wish to deny that what is can be spatially dispersed and be a cosmos and also that even if what is is set together, without gaps and forming a plenum, it still cannot form a cosmos. Parmenides could here simply say 'it cannot be dispersed', without the comment on order and 'nor can it be put together' without the cosmological and indeed teleological associations of συνίστημι. As it stands this looks like an outright rejection of the idea that what is can be a cosmos on the grounds that lacking parts it cannot have the necessary order.[14] That stands in stark contrast to the idea of *diacosmos*.

The third point I would add to this analysis of *diacosmos* Fr. 8, 60 is that a few lines earlier, the goddess, when introducing the opinion section, says:

> ἐν τῶι παύω πιστὸν λόγον ἠδὲ νόημα
> ἀμφὶς ἀληθείης. δόξας δ' ἀπὸ τοῦδε βροτείας
> μάνθανε κόσμον ἐμῶν ἐπέων ἀπατηλὸν ἀκούων.
>
> At this point I stop my trustworthy account of thought
> and truth. From now on learn the opinions of mortals,
> listening to the deceitful *kosmos* of my words.
> Parmenides Fr. 8, 50–52.

I deliberately leave *kosmos* untranslated here as it is all too easy to render it as 'world', 'form' or 'order' and to lose the contrast with διάκοσμον just a few lines further on. On the one hand we have a deceitful order of words, on the other we have a thorough and entire ordering. Again, I suggest what this ought to focus us on is methodology and criteria for cosmogony and cosmology. What are the differences between the deceitful cosmos of words and a thoroughly ordered cosmos?[15]

III

Returning to Parmenides Fr. 8, 60–61, παρελαύνω, the root verb for παρελάσση means to drive past or overtake, in sailing or running. Some commentators have

14 One might also look at Fr. 4 in terms of rarer and denser, when the target might be Anaximenes.

15 I agree with P. Curd *The Legacy of Parmenides*. Las Vegas, Parmenides, 2004 p. xvii. that Parmenides does not deny the possibility of genuine cosmology and, while I would disagree with Curd on some of the specifics of how Parmenides does this, I agree that "His aim is to criticize previous accounts of the nature of things while formulating metatheoretical requirements for an acceptable cosmological account."

taken this to imply that the account we are about to be given is in some sense the best possible. This is unjustified on the philology. What the Greek actually says is that no-one can overtake you. It is important to recognise the possibility that accounts of the cosmos might equal this one without surpassing it.[16] It is notable that Parmenides does not rule out this possibility when he easily could have done so and no other passage in the poem suggests that this is a better account than any other. In particular, Fragment 1 might be thought to deny the possibility of a better cosmology:

> χρεὼ δέ σε πάντα πυθέσθαι
> ἠμὲν Ἀληθείης εὐπειθέος[17] ἀτρεμὲς ἦτορ
> ἠδὲ βροτῶν δόξας, ταῖς οὐκ ἔνι πίστις ἀληθής.
>
> It is right[18] that you learn all things
> both the unshaken heart of persuasive truth
> and the opinions of mortals, in which there is no true trust.
> Parmenides Fr. 1, 28–30.

At Parmenides, Fr. 8, 60–61 we are promised the entire, fitting ordering (διάκοσμον ἐοικότα πάντα) and this is worth emphasising, as is the fact that the Greek phrase, taken in this way, is quite emphatic in itself. Certainly Parmenides is perceived as having accounted for all the phenomena, by Plutarch, who commented that Parmenides:

> ὅς γε καὶ διάκοσμον
> πεποίηται, καὶ στοιχεῖα μιγνύς, τὸ λαμπρὸν καὶ σκοτεινόν,
> ἐκ τούτων τὰ φαινόμενα πάντα καὶ διὰ τούτων ἀποτελεῖ.
> καὶ γὰρ περὶ γῆς εἴρηκε πολλὰ καὶ περὶ οὐρανοῦ καὶ ἡλίου
> καὶ σελήνης καὶ ἄστρων καὶ γένεσιν ἀνθρώπων ἀφήγηται
>
> Made an ordering,
> and mixing the elements, the light and dark,
> out of and through these he completed all of the phenomena
> He has a great deal to say about the earth, the heavens, the sun

16 I do not see that the fact that the goddess gives the account and 'has her authority' means that it is the best possible (contra Palmer (2009) p. 162.). It may still be equalled and at no point is it made clear what, either in the account or in the nature of the account makes it better than any other account, other than the claim to comprehensiveness which could be equalled.

17 Reading εὐπειθέος rather than εὐκυκλέος, see Mourelatos (1970, 2008) pp. 154–6, cf. J. Palmer Parmenides and Presocratic Philosophy, Oxford: Oxford University Press, 2009, 378 ff., Gallop (1984) 52, Curd (2004) 21 note 53.

18 Agreeing with Mourelatos (1970, 2008) 277 ff. that χρή and its cognates should be translated with a sense of 'ought' or 'right' or 'proper' rather than necessity in the sense of constraint or compulsion.

and the moon and he tells of the generation of humans.
Plutarch, *Reply to Colotes* 1114b.

Here I emphasise τὰ φαινόμενα πάντα καὶ διὰ τούτων ἀποτελεῖ, that all of the phenomena have been completed. By modern standards of course this looks wildly optimistic, but it is reasonable in the context of presocratic cosmology and cosmogony, where the significant issues could be dealt with in a few hundred lines.[19] Parmenides both claims to make and is perceived to have made a complete account of the phenomena.

Finally in relation to Parmenides, Fr. 8, 60–61 I translate ἐοικότα as fitting rather than as 'likely' or 'probable' in line with modern philology which finds attested usage for 'fitting' prior to Parmenides but not for 'likely' or 'probable'.[20] I take ἐοικότα as an adjective modifying διάκοσμον and not an adverb modifying φατίζω.[21] There are two more related points here. Firstly, recent *Timaeus* scholarship has looked closely at the issue of the *eikos muthos* and has argued for a reading of 'appropriate, reasonable, rational' in Plato rather than 'likely' or 'probable'.[22] Secondly, it is difficult to see how the notion of a likely or probable account helps given what Parmenides says about mortal opinion at Fr. 1, 28–30 and Fr. 8, 50–52. It is unclear how it would be possible for there to be a more likely cosmology within Parmenides' scheme or, if this is possible, why the particular cosmology that Parmenides gives would count as more likely.

IV

My proposal concerning the nature of Parmenides' cosmology is based on this construal of παρελαύνω and the claim that the cosmology is complete. If the cosmology is complete, then no other theory will be able to surpass it on the grounds of accounting for more of the phenomena, though some may well

19 See G. Cerri, The Astronomical Section of Parmenides' Poem, pp. 81–93, in N. L. Cordero, Parmenides, *Venerable and Awesome*, 2011, pp. 82–3.

20 See e.g. W. J. Verdenius, *Parmenides: Some Comments on His Poem*. Groningen: Walters, 1942, pp. 50–51 and R. Cherubin, Light, Night, and the Opinions of Mortals: Parmenides B8.51–61 and B9, *Ancient Philosophy* 25, 2005, 1–23, pp. 9–10 and Bryan (2011).

21 Cf. Cherubin (2005) 10, note 20. So a 'fitting ordering' rather than 'I tell you an ordering as is fitting'.

22 M. F. Burnyeat, Eikos Muthos. *Rhizai A Journal for Ancient Philosophy and Science*, 2005 143–165, pp. 146–147, cf. G. Betegh, What Makes a Myth Eikos? pp.213–224 in R. D. Mohr and B. M. Sattler, *One Book, The Whole Universe*. Las Vegas, Parmenides 2010 and A. P. D. Mourelatos The Epistemological Section (29b–d) of the Proem in Timaeus' Speech, pp. 225–248 in Mohr and Sattler (2010), cf. Bryan (2011).

equal it. In modern terms, the theories accounting for all the phenomena will be underdetermined by the data. Put another way, on the grounds of accounting for the phenomena, there will be no sufficient reason for choosing one of these theories in front of another.[23] Why would Parmenides want a theory which can be equalled but not surpassed though? That depends on whether we take the cosmology as Parmenides' doctrine, or something more akin to an argument. The point of the light/night cosmology may be to generate a critique of current cosmology and to pose general problems for thinking about cosmology, if it generates this underdetermination. Part of the motivation here might lie in Sedley's comment about the cosmological tradition prior to Parmenides, that they 'produced too many competing answers to inspire confidence'.[24] If we want a cosmology, there are crucial choices to be made and we need to provide sufficient reason for those choices. If there are multiple theories which cover the data, then we need some further criteria concerning the nature of theories before we can make a choice between them.[25] It is worth paying attention to the order of what is introduced in the opinion section at Fr. 8, 53ff.

μορφὰς γὰρ κατέθεντο δύο γνώμας ὀνομάζειν·
τῶν μίαν οὐ χρεών ἐστιν – ἐν ὧι πεπλανημένοι εἰσίν –
τἀντία δ' ἐκρίναντο δέμας καὶ σήματ' ἔθεντο
χωρὶς ἀπ' ἀλλήλων, τῆι μὲν φλογὸς αἰθέριον πῦρ,
ἤπιον ὄν, μέγ' ἐλαφρόν, ἑωυτῶι πάντοσε τωὐτόν,
τῶι δ' ἑτέρωι μὴ τωὐτόν· ἀτὰρ κἀκεῖνο κατ' αὐτό
τἀντία νύκτ' ἀδαῆ, πυκινὸν δέμας ἐμβριθές τε.

Forms, then, they laid down two notions to name.[26]
Of which they ought not name one[27] – in this they have gone astray –

23 So this is a straightforward underdetermination (many theories can be devised to cover the data) rather than the more complex Duhem-Quine underdetermination thesis. This underdetermination affects qualitative theories (many of those for the data) rather than the mathematical formulation where many curves can always be found to fit any numerical data set out in graphical fashion.

24 Sedley (1999), p. 131.

25 A note in relation to Palmer's (2009) modal reading of Parmenides (the truth part of the poem deals with 'what must be' the second with 'entities that are but need not be'. There is a sense in which what must be is determined, while what might be may well be underdetermined.

26 This preserves the word order of the Greek as far as possible, cf. Mourelatos (1970, 2008) 228. See below for the 'two minds' view.

27 Here I retain the ambiguity in the Greek (how many is it necessary to name or not to name?) which I strongly suspect is deliberate on Parmenides' part. There is no 'only' in the Greek which appears in some translations, e.g. A. H. Coxon, *The Fragments of Parmenides*, Assen: Van Gorcum, 1986.

> and distinguished them as opposite in form and set up signs
> apart from each other, on the one hand the aetherial flame of fire,
> being gentle and very light, in every way identical to itself
> but not identical to the other. This in itself
> is opposite, dark night, dense in body and heavy.
> Parmenides Fr. 8, 53–59.

First mortals lay down (κατέθεντο) two forms, then they distinguish them as opposites, which at this stage are non-specific, then they set up 'signs' (σήματ'), characterising the opposites as light and dark. Fr. 8, 60–61, which is the end of Fr. 8 then follows promising a complete, fitting and thorough ordering. So schematically, the procedure goes:

1) Set up a non-specific pair of contraries, x and the contrary of x.
2) Distinguish them as 'opposite in form'.
3) Set up 'signs' and attribute characteristics
4) Reproduce all the phenomena.

It is very noticeable that after the tightly argued truth, the basic principles of the cosmology are introduced without any argument whatsoever, especially as this is an area where there is already considerable controversy between cosmologists prior to Parmenides.[28] There are four considerations we might raise here:

1) What reason is there for choosing two forms for naming as opposed to any other number? Especially if mortals have in some way gone astray in doing this?
2) What reason is there for choosing light and dark as opposed to any other pair of contraries as the primary opposites?[29]
3) What reason is there for the proposed distribution of qualities, or indeed any distribution of qualities? One might imagine a poet saying 'dark night, dense in body and heavy' as their poetic description of what night feels like, but is that a sound philosophical attribution?
4) What reason is there for the choice of the signs which mortals set up? There is an important contrast here in relation to signs. Earlier, we are told that:

> μόνος δ' ἔτι μῦθος ὁδοῖο
> λείπεται ὡς ἔστιν· ταύτηι δ' ἐπὶ σήματ' ἔασι

28 This is not to say that there are no arguments in the opinion section, just that the key principles when this section begins are not argued for, in stark contrast with what has gone before and, one might add, the goddesses order to 'judge by reason' of Fr. 7.

29 One might argue that light and dark encompass all of the opposites, as all the pairs such as hot and cold line up with light and dark, but why choose out of the arranged pairs light and dark as the primary description?

πολλὰ μάλ', ὡς ἀγένητον ἐὸν καὶ ἀνώλεθρόν ἐστιν,
οὖλον μουνογενές[30] καὶ ἀτρεμὲς ἠδὲ τέλειον·

A single account of the road
remains, that it is. On this there are signs,
very many of them, that what is is ungenerated and imperishable
a whole of a single kind, both unshaking and complete.
Parmenides Fr. 8, 1–4

LSJ give *sign, mark, token* for σῆμα so in the context of the road metaphor here sign or signpost seems reasonable.[31] These signs though are there, objective, independent markers to be discovered as the road is followed. At the beginning of the opinion section, on the other hand, mortals 'set up signs' (σήματ' ἔθεντο) – but do mortals have sufficient reason to choose and set up these signs? Do these signs then guide us? There is an interesting sense in which that may be true. If we set up our cosmological theory in terms of a pair of primary opposites, that in a sense guides the rest of our cosmology. Where we have a new phenomenon to explain, we look to do so in terms of the opposites we have already laid down. Where we have competing theories to explain a phenomenon, we might decide between them on grounds of coherence. Which of the competing theories better coheres with our primary pair, or the consequences we have established from our primary pair? Scanning the literature, nothing appears to have been written on this contrast between the independent signs on the intellectual road and the signs that humans set up but this seems critical in understanding Parmenides.

Mourelatos has argued that Fr. 8, 53, μορφὰς γὰρ κατέθεντο δύο γνώμας ὀνομάζειν, has a secondary sense of those laying down the forms being in two minds.[32] If that is correct, and I am inclined to think it is, the underdetermination/sufficient reason issues allow us to understand why they were in two minds. This sentence would then be in a highly significant position, indicating the mental state of mortals when faced with the underdetermination issues introduced in the next few lines.[33]

I take a major deception that the goddess speaks of to be that mortals appear to have made proper judgements in selecting opposites and selecting their

30 Reading οὖλον μουνογενές rather than ἐστι γὰρ οὐλομελές, see Curd (2004) 68 ff. and agreeing that μουνογενές means 'of a single kind', see Curd (2004) 71, cf. Palmer (2009) 382 ff., Gallop (1984) 64.

31 Cf. Mourelatos (1970, 2008) p. 25 note 40.

32 Mourelatos (1970, 2008) 229 ff. As Mourelatos argues, the sentence is ambiguous and an unambiguous reformulation of the sentence, still fitting Parmenides' hexameter, was easily available.

33 One might also note the goddesses injunction to 'judge by reason' at Fr. 7, 5 and the impossibility of doing so here.

qualities, when in fact they have not. They have chosen where the choice is underdetermined, in sharp distinction to the truth part of the poem. If we are aware of this happening with the light/dark cosmology, we will know how to undermine any other account by asking sufficient reason questions about the basis of their cosmology. Those accounts will not be able to surpass the light/dark cosmology, either in terms of a defence of their basic suppositions or their ability to account for the phenomena if the subsequent ordering given for the light/dark cosmology is complete as is claimed.

This then is why the opinion section is so long. It needs to have an account of all the phenomena usually accounted for in early Greek cosmologies in order to generate the underdetermination. The light/dark cosmology is not intrinsically better than all of its competitors, with some able to equal it, generating this underdetermination.

V

Parmenides' cosmology asks questions about theory choice. I also want to suggest that it functions as a critique of some preceding views and as a challenge to Parmenides' successors.

Let us look at the notion of critique first. Consider Fr. 8, 53–59 in relation to the Pythagoreans who use contrary pairs such as right and left, male and female, etc. Here are the Pythagorean opposites:[34]

finite	infinite
odd	even
one	many
right	left
rest	motion
straight	crooked
light	darkness
good	evil
square	oblong
male	female

34 From Aristotle, *Metaphysics* 986a22. This degree of codification of the Pythagorean opposites may well have been later than Parmenides, but the table nevertheless illustrates the types of opposites and their arrangements that the earlier Pythagoreans would have been interested in (see the Aristotle on Alkmaeon passage below) even if they might not have been arranged in this exact manner.

What sufficient reason is there to pick this set of opposites, when there are many other possibilities and many other combinations? Was there a debate about this sort of issue? According to Aristotle, there was and he compares the looser approach of Alkmaeon with the more precise approach of the Pythagoreans:

Other members of this same school say there are ten principles, which they arrange in two columns of cognates-limit and unlimited, odd and even, one and plurality, right and left, male and female, resting and moving, straight and curved, light and darkness, good and bad, square and oblong. In this way Alkmaeon of Croton seems also to have conceived the matter, and either he got this view from them or they got it from him; for he expressed himself similarly to them. For he says most human affairs go in pairs, meaning not definite contrarieties such as the Pythagoreans speak of, but any chance contrarieties, e.g. white and black, sweet and bitter, good and bad, great and small. He threw out indefinite suggestions about the other contrarieties, but the Pythagoreans declared both how many and which their contrarieties are.[35]

Parmenides I suggest took a more radical view than Aristotle here. It is not enough that the opposites are definite and that there is a strong sense of how many of them there are. There must be sufficient reason to support these choices. On this I disagree with Guthrie,[36] who sees Parmenides as intending a 'rationalization of existing beliefs'. Parmenides comes to undermine existing beliefs here, or at least to ask for a justification of them. Guthrie does raise an interesting point in arguing that Parmenides grouped together pairs of opposites in the following manner:

Active	*Passive*
Fire	Night
Bright	Dark
Sky	Earth
Hot	Cold
Dry	Moist
Rare	Dense
Light	Heavy
Right	Left
Male	Female
Soft	Hard

35 Aristotle, *Metaphysics* I/5, translation by Ross.

36 W. K. C. Guthrie, *The Presocratic Tradition from Parmenides to Democritus*. Cambridge: Cambridge University Press 1965, pp. 77 ff.

Guthrie recognises this table as conjectural,[37] but it is the general principles rather than the details which are significant here. It is possible to look at the strength of the association for the columns in tables opposites in several ways. It may be very strong, in the sense that square is good and oblong evil. There may be some principle which characterises the members of each column, as active and passive do in Guthrie's table of Parmenides' opposites. They may simply be associated together with no specific principle in view.[38] This raises a further sufficient reason question though. There are not only issues about how many and which combination of opposites should make up the table, but why they are associated in these grouping, however strong we take that association to be.[39]

We can look at a second theme here as well, which is a possible critique of the Milesians. Anaximander posits the *apeiron*, the unlimited, from which come pairs of opposites such as hot and cold.[40] Does he give sufficient reason though why we get specific pairs of opposites rather than any other choice? Later in this paper I will argue that Parmenides has another critique of Anaximander, which is whether there is sufficient reason for when and where this separation occurs. We might also question whether Anaximenes has sufficient reason to postulate dense and rare as the primary opposition, or why the dense should be associated with cold and the rare with hot.[41] Focused slightly differently, how do we choose between water (Thales), unlimited (Anaximander) air (Anaximenes) or fire (Heraclitus) or light/dark if all of these make a claim to account for all of the phenomena?

Cosmologies pre-Parmenides could not justify their choice of opposites or of cosmological principle constituents on the grounds that they alone could account for the phenomena. Depending on how radically we want to take this, either Parmenides shows that the phenomena can be reproduced by the alternative pair of light and dark, or he shows that this can be done with an arbitrary choice of opposites, and an arbitrary choice of qualities to characterise those opposites. Parmenides may give us light and night as an example of how the phenomena can easily be produced along these lines, or he may be saying 'even with principles as nebulous and ill defined as light and night one can still produce the phenomena'. So Parmenides cosmology is a critique of preceding cos-

37 Guthrie (1965) vol. II, p. 77 and see p. 77 note 1 for his justification.

38 I make no comment here on the proper interpretation of the Pythagorean table.

39 If questioning such attributions is a theme in Parmenides, we might want to rethink whether Fr. 17 gives us doctrine or not: "δεξιτεροῖσιν μὲν κούρους, λαιοῖσι δὲ κούρας" ("Young boys on the right, young girls on the left"). This is usually taken, with Galen (this is Galen. *in Epid*. VI 48) to be Parmenides' account of which side of the womb the sexes take, but we might take this as another sufficient reason challenge – what reason is there for this distribution?

40 See e.g. Pseudo-Plutarch, *Stromateis* 2, Aetius *Placita* II, 11, 5.

41 See Plutarch VII, 947 f., Hippolytus *Refutatio* 1, 7, 1, Simpicius *Physics* 24, 26.

mology on sufficient reason grounds. It also stands as a challenge to any future cosmology. Can sufficient reason be given for a choice of cosmological theory?

VI

If we do construe the cosmology in this way, as generating sufficient reason issues, does that open up some new possibilities for linking the truth and opinion parts of the poem together? I believe it does and this will lead to some further consideration concerning cosmogony, cosmology and sufficient reason. Fr. 8, 5–10 is important here:

> οὐδέ ποτ' ἦν οὐδ' ἔσται, ἐπεὶ νῦν ἐστιν ὁμοῦ πᾶν,
> ἕν, συνεχές· τίνα γὰρ γένναν διζήσεαι αὐτοῦ;
> πῇι πόθεν αὐξηθέν; οὐδ' ἐκ μὴ ἐόντος ἐάσσω
> φάσθαι σ' οὐδὲ νοεῖν· οὐ γὰρ φατὸν οὐδὲ νοητόν
> ἔστιν ὅπως οὐκ ἔστι. τί δ' ἄν μιν καὶ χρέος ὦρσεν
> ὕστερον ἢ πρόσθεν, τοῦ μηδενὸς ἀρξάμενον, φῦν.
>
> It never was nor will be, as it is now, all alike,
> one and continuous. What birth will you seek for it?
> In what way, from what source did it grow? I will not allow you
> to think or say from not being, for it is not to be thought or said
> that it is not; and what warrant might have driven it
> later rather than sooner, beginning from nothing, to grow?
> Parmenides Fr. 8, 5–10.

The last part here has indeed been taken as a sufficient reason argument and while it is in the context of change in general, it has also been taken to be about cosmogony and that in some ways is the most radical case here.[42] If there is nothing at all why would a cosmos begin to form? Why should cosmogony begin at any one time as opposed to any other time? One way of linking this into the truth of the poem is to look at Fr. 19, traditionally taken as closing both the opinion section and the poem:

> οὕτω τοι κατὰ δόξαν ἔφυ τάδε καί νυνκαὶ νῦν ἔασι[43]
> καὶ μετέπειτ' ἀπὸ τοῦδε τελευτήσουσι τραφέντα·
> τοῖς δ' ὄνομ' ἄνθρωποι κατέθεντ' ἐπίσημον ἑκάστωι.

42 Translating χρέος here as warrant rather than necessity (see Mourelatos (2008) xxviii and xxxii note 28).

43 Printing καὶ νῦν ἔασι instead of καί νυν ἔασι which helps to bring out the past/present/future temporal sense of the passage here, cf. Thomas Calvo, *Truth and Doxa in Parmenides*, Archiv für Geschichte der Philosophie, Volume 59, Issue 3, 1977, pp. 245–260.

> Thus according to opinion these things have grown and now are
> and afterwards, from this point, they will grow and come to an end.
> For them men have laid down names to mark each.
> Parmenides Fr. 19.[44]

That focuses us quite strongly back on Fr. 8, 5–10. There is the same issue of growth and there is an allusion to the timeless nature of what is. It should also focus us back onto Fr. 8 53–55 where mortals laid down names and signs, here ἐπίσημον. Another way of linking Fr. 8, 5–10 into the opinion section of the poem is through Fr. 10:

> εἴσηι δ' αἰθερίαν τε φύσιν τά τ' ἐν αἰθέρι πάντα
> σήματα καὶ καθαρᾶς εὐαγέος ἠελίοιο
> λαμπάδος ἔργ' ἀίδηλα καὶ ὁππόθεν ἐξεγένοντο,
> ἔργα τε κύκλωπος πεύσηι περίφοιτα σελήνης
> καὶ φύσιν, εἰδήσεις δὲ καὶ οὐρανὸν ἀμφὶς ἔχοντα
> ἔνθεν ἔφυ τε καὶ ὥς μιν ἄγουσ ἐπέδησεν Ἀνάγκη
> πείρατ' ἔχειν ἄστρων.
>
> You will know the nature of the aether and all
> of the signs in the aether and the clean, pure lamp of the sun,
> its destructive deeds and the manner of their generation.
> You will learn the works and nature of the wandering round-eyed moon
> you will know the surrounding heaven
> whence it grew and how necessity led and bound it
> to hold the limits of the stars.
> Parmenides, Fr. 10.

Here there is generation (ἐξεγένοντο) in contravention of Fr. 8, 2–3 and in particular the heavens grew in contravention of in Fr. 8, 10 (ἔφυ, same verb as the highly emphatic φῦν in Fr. 8, 10). Finally, Fr. 11 is also very interesting in this respect:

> πῶς γαῖα καὶ ἥλιος ἠδὲ σελήνη
> αἰθήρ τε ξυνὸς γάλα τ' οὐράνιον καὶ ὄλυμπος
> ἔσχατος ἠδ' ἄστρων θερμὸν μένος ὠρμήθησαν
> γίγνεσθαι.
>
> How earth, sun, moon,
> common aether, heavenly milky way, Olympus
> furthest away and the hot might of the stars began to
> come to be.
> Parmenides Fr. 11.

I have translated ὠρμήθησαν γίγνεσθαι here in an understated way as 'began to come to be'. That on its own is contrary to the strictures of the truth part of the

44 Simplicius, *De Caelo Commentary*, 558, 8.

poem and Fr. 8, 5–10, but one might also look at some of the shades of meaning for ὡρμήθησαν and ὦρσεν at Fr. 8, 9. Rush, thrust,[45] strove,[46] and hasten are all possibilities for ὡρμήθησαν here and may sharpen the contrast with Fr. 8 5–10 depending on exactly how we take ὦρσεν there. There can be no doubt that Parmenides took Fr. 8, 5–10 to have cosmological and cosmogonical significance and that the opinion part of the poem frequently reminds us of that.

VII

There is another sufficient reason issue in the truth part of the poem which leads to some interesting issues in cosmogony and cosmology. A good deal of the truth can be generated out of considerations concerning the nature of existence and non-existence. That what exists is homogenous might be a sufficient reason issue (no reason for inhomogeneities to be here than elsewhere) but can be generated simply by denying any existence to non-existence. Reality cannot be like a Swiss cheese, because the holes, according to Parmenides, cannot exist. However, we are also told that:

> αὐτὰρ ἐπεὶ πεῖρας πύματον, τετελεσμένον ἐστί,[47]
> πάντοθεν εὐκύκλου σφαίρης ἐναλίγκιον ὄγκωι,
> μεσσόθεν ἰσοπαλὲς πάντηι· τὸ γὰρ οὔτε τι μεῖζον
> οὔτε τι βαιότερον πελέναι χρεόν ἐστι τῆι ἢ τῆι.
>
> As there is an ultimate limit,[48] it is complete,
> from all sides like the bulk of a well-rounded sphere,[49]
> equivalent in all ways from the centre. For it must not be any larger
> or any smaller here or there.
> Parmenides, Fr. 8, 42–45.

There has been considerable debate on whether Parmenides argued that what is is physically spherical. I am going to argue for the literal view. I do not think this was an error or an oversight on Parmenides' part. I believe his view to be coherent, consistent and philosophically interesting. I also believe his view sets up an interesting sufficient reason critique and challenge for cosmogony. I will

45 Gallop (1984) p. 81.
46 Cerri (2011) pp. 85–6.
47 Punctuating 'τετελεσμένον ἐστί, πάντοθεν' rather than 'τετελεσμένον ἐστί πάντοθεν,'. See Gallop (1984) 72, Mourelatos (1970, 2008) 123, Curd (2004) 92.
48 'Ultimate limit' rather than 'furthest limit' for πεῖρας πύματον, see below.
49 'In all ways' rather than 'from all sides' for πάντοθεν, see below.

be careful here to refer to a 'spherical entity' and not a 'spherical cosmos'. The entity here I believe is meant to be spherical, but lacks the parts and the differentiation, ordering and distribution of parts required for it to count as a cosmos.[50]

Against the literal interpretation, it is argued that Parmenides does not say what is is a well rounded sphere, but it is like, ἐναλίγκιον, the bulk of a well rounded sphere. The description should be treated as a metaphor or analogy.[51] We are then free to explore in which ways what is may be like a sphere without actually being physically spherical. Owen has argued that just as there is in invariance of time in Parmenides, the analogy of the sphere brings out the invariance of space.[52] Mourelatos has argued that a key aspect of a sphere is its perfect symmetry, such that a sphere appears spherical whichever aspect it is viewed from,[53] and that the description of the sphere fits well with the idea of the complete nature of being that Parmenides is arguing for.[54]

In favour of the literal interpretation, Jameson has argued that σφαῖρα should be taken in the sense of ball, [55] rather than in the more abstract sense of sphere and that ὄγκωι, bulk, also lends a physical sense.[56] If we take πάντοθεν to mean 'from all quarters, from every side' this could have either literal or metaphorical meanings. However, πάντοθεν can also mean 'in every way' which would lean strongly to a literal reading. While I tend to agree with Gallop that we cannot conclude from the fact that Parmenides employed the sphere analogy whether he meant it literally,[57] it would also seem relativley straightforward, if

50 As noted earlier, Parmenides does not refer to what he argues for in the truth part of the poem as a cosmos, Fr. 4 explicitly denies it is a cosmos and the contrasts introduced at Fr. 8, 60–61 would seem to deny it is a cosmos as well.

51 Curd (2004) p. 92 and p. 93, Mourelatos (1970, 2008) p. 124 rejects 'simile' as too weak, though he rejects the literal interpretation in favour of 'speculative metaphor', see his p. 124 and Ch. 1.

52 Owen (1960), p. 66.

53 Mourelatos (1970, 2008) p. 129.

54 Mourelatos (1970, 2008) p. 124.

55 G. Jameson, Well Rounded Truth and Circular Thought in Parmenides. *Phronesis* 1958, pp. 15–30, p. 15 note 3, see Homer *Odyssey* VI, 100, 115, it is what Nausicaa and her maidens play with, One would have to be cautious though to specify an homogenous ball, rather than ball in the sense of football where the surround is distinct from its contents.

56 I would add to this that Plato uses σφαῖρα to describe a physically spherical earth in the *Phaedo* 110b6–7 (ὥσπερ αἱ δωδεκάσκυτοι σφαῖραι) and that Anaximander may well have used this term to decribe the carriers of the heavenly bodies (Ἀναξίμανδρος ὑπὸ τῶν κύκλων καὶ τῶν σφαιρῶν, ἐφ' ὧν ἕκαστος βέβηκε, φέρεσθαι, Aetius, *Placita*, II, 16, 5.), where again the meaning is clearly physical.

57 Gallop (1984) p. 20.

Parmenides had wished to do so, to exclude spatial considerations here. Certainly many in antiquity took him to be arguing for a spherical entity.

There is another passage though, shortly before the sphere analogy, which might incline us towards a literal reading:

> ταὐτόν τ' ἐν ταὐτῶι τε μένον καθ' ἑαυτό τε κεῖται.
> χοὔτως ἔμπεδον αὖθι μένει· κρατερὴ γὰρ Ἀνάγκη
> πείρατος ἐν δεσμοῖσιν ἔχει, τό μιν ἀμφὶς ἐέργει.[58]
>
> Remaining the same and in the same, it lies according to itself
> thus it remains firmly in place. For strong necessity
> holds it in the bonds of a limit, which shut it in all around.
> Parmenides Fr. 8, 29–30.

αὖθι here looks strongly spatial. LSJ *give on the spot, here, there*, as primary meanings.[59] If this is meant to express the idea that what is undergoes no qualitative changes, without implying that what is has a place and stays there, it is very clumsily and ambiguously expressed. If Parmenides were only talking about change in general here, then all he would need to say would be 'Remaining the same, strong necessity holds it in the bonds of a limit, which shut it in all around.' He does not though, and adds in the strongly spatial 'in the same' as well as αὖθι. Parmenides also uses ἀκίνητον at Fr. 8, 26 and 38, for which LSJ give 'unmoved, motionless'. ἀκίνητον clearly means more in this context, covering many sorts of changes, but it would have to retain its primary meaning as well. Furthermore, at Fr. 8, 41, Parmenides specifically talks of τόπον ἀλλάσσειν, change of place.[60]

This passage does two things. Firstly, it establishes a context of considerations of place/space in which the comparison to a sphere is made. One might add to that Fr. 8, 25:

> τῶι ξυνεχὲς πᾶν ἐστιν· ἐὸν γὰρ ἐόντι πελάζει.
>
> Thus it is all continuous. For what is draws near to what is.
> Parmenides Fr. 8, 25.[61]

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58 I stay with the orthodox text here rather than Fränkel's proposed changes, see Fränkel (1975) p. 30.

59 Homer's usage is strongly spatial as well, see *Odyssey* V, 208.

60 Cf. Sedley (1999) 119ff. that a spatial reading is required to give substance to Parmenides' arguments about change. Parmenides is of course critical of change of place but one might argue the criticism is of change, not of place.

61 Jameson (1958) p. 15 note 3 cites Parmenides Fr. 8, 22–25 as evidence that Parmenides is 'conscious of reality as an extended thing'. Fr. 8, 22–24 seem to me reasonably easy to construe as solely about the metaphysical properties of reality, Fr. 8, 25 much less so. See also Fr. 8, 6

The primary sense of ξυνεχὲς in LSJ is 'spatially continuous' and πελάζει in this context could easily be translated as 'touches'.[62] Secondly, if what is has a place, and is spatially continuous as well, it will then be very difficult to deny that what is is spatial and has some determinate shape, if it is complete.[63] The question then is; which shape?

The major problem for the literal view is that it is said to generate paradoxes. These are allegedly easy to generate, impossible to solve and a philosopher of the status of Parmenides would not have fallen into them.[64] One, involving limits, can be expressed like this: "Must there not be empty space beyond the limits of the sphere if they are to function as limits?"[65] If we take limit here in the sense of edge, that may be true, but there are other ways of thinking about limits such that they are neither edges nor external to what is limited. Here it is important to understand Fr. 8, 42 in a broad sense. 'αὐτὰρ ἐπεὶ πεῖρας πύματον' might be translated as 'since there is a furthest limit', giving it a strong spatial sense. However, Parmenides seems to be discussing what is and the complete nature of what is quite generally at this stage, so it may be better to understand this as 'since there is an ultimate limit' in a more metaphysical sense.[66]

Can a cosmos have limits that are not edges? The modern view here is that what limits the size of the universe is the amount of time it has been in existence and its rate of expansion. Nothing limits the universe externally and there are no edges to the universe. There is neither time nor space outside of the universe as these are both generated by the big bang. If we want some ancient

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ἕν, συνεχές (one, spatially continuous) for further indications that Parmenides has something extended in mind.

62 E.g. Gallop (1984) p. 69.

63 Something that has place technically need not have shape (a point has place but does not occupy space and has no shape) but Parmenides can hardly be arguing that what is has the characteristics of a point.

64 See e.g. M. C. Stokes, *One and many in Presocratic Philosophy*. Cambridge: Harvard University Press, 1971, p. 140.

65 G. S. Kirk, J. E. Raven, M. Schofield *The Presocratic Philosophers*, 2nd edition, 1983, Cambridge: Cambridge University Press (KRS) p. 254.

66 See e.g. Gallop (1984) p. 20. Parmenides closes this part if the discussion by saying (Fr. 8, 49): "οἳ γὰρ πάντοθεν ἶσον, ὁμῶς ἐν πείρασι κύρει", "For being in all directions equal, it falls homogenously within its limits." Again, I take limit here in the more general sense rather than as edge and the emphasis to be on the homogeneity of what is. The sphericity debate usually polarizes around Fr. 8, 42 being a spatial/physical limit, so what is is spherical and the paradoxes apply, or Fr. 8, 42 not being a spatial/physical limit and what is not being spherical. Here I take the view that Fr. 8, 42 is a spatial/physical limit but what is is spherical, being limited in other ways.

analogues to this, if we were to ask a Platonist what limits the size of the cosmos, they might well cite the harmonic structure of the cosmos given at *Timaeus* 35bff. If we ask the same question of a Ptolemaic astronomer, they might well answer that there is no unused space in the cosmos, we space the deferent circles for the planets and stars on the principle that the epicycles may touch but not overlap and that limits the size of the cosmos.[67] Neither Plato, nor Aristotle nor Ptolemy countenance empty space beyond the cosmos.

There is an interesting move in Plato from the *Republic* and the Myth of Er, where the cosmos is bound together externally by ὑποζώματα (which are ropes used around the hull of a trireme to strengthen it) and the cosmos turns on a pivot.[68] The *Timaeus* 32ff. though makes it quite clear that the universe exhausts what is and is entirely complete, with no external binding or pivot to rotate on. There is no doubt that the cosmos in the *Timaeus* is physically spherical, so it is also interesting that Plato, in what looks like an allusion to Parmenides Fr. 8, 42–45, says that the cosmos is:

> λεῖον καὶ ὁμαλὸν πανταχῇ τε ἐκ μέσου ἴσον καὶ ὅλον καὶ τέλεον.
>
> Smooth, uniform, equal in all ways from the centre, whole and complete.
> Plato, *Timaeus* 34b

A second paradox can be expressed rather more bluntly: If the cosmos is spherical, what is outside it? The answer to that, for Parmenides, cannot be anything that asserts the existence of non-being or implies that a void exists. As that seems unavoidable, he cannot then have thought that what is is spherical.[69] I am not convinced that this line solves all the problems here though. As remarked earlier, Parmenides is talking quite generally about the whole and complete nature of what is. If so, one would have to accept that there is a limit to what is, as Parmenides clearly does. One might then ask: What is beyond/other than/in addition to/outside of what is?[70] Again, the answer ought not to be 'there is nothing'. Instead, the answer might run like this. What is is complete. What is exhausts what is and what we can speak of. That which does not exist

67 Technically, both these methods give ratios rather than absolute size, though both could still be quite reasonably said to be limits on the size of the cosmos. Both can give absolute size if the absolute distance between say earth and moon is known. Ptolemaic astronomers did attempt this, Plato's model was abandoned prior to the required techniques being devised.
68 Plato, *Republic* 616c.
69 One move to avoid this is to suggest that Parmenides had a closed vision of space rather than the later (in modern terms Euclidean) view of infinitely extending space. However, I doubt that Parmenides had a conception of space independent of his conception of what is.
70 If there is no limit to what is, I would still argue for a spherical cosmos for Parmenides.

does not exist beyond what exists. The limits of what is are limits by exhaustion, not external limits or edges bordering on something else. I do not want to suggest that space is something independent for Parmenides,[71] but one might then say similarly that space is limited, it is limited by exhaustion and does not have external limits and does not have edges bordering on something else. What I do want to suggest is that for Parmenides, what is has spatial characteristics such that it is reasonable to ascribe a shape to what is, such as a sphere. Just as what is exhausts what is, those spatial characteristics exhaust the spatial.[72]

If we understand limit for Parmenides as limit by exhaustion rather than as external constraint or edge, then the alleged paradoxes are not generated. Parmenides has an intelligent and original treatment of place and space. This leaves us though with the question of why a sphere as opposed to some other shape? Does this sphericity call upon sufficient reason considerations and not just on the nature of being? The homogeneity of what is can be derived from existence/non-existence considerations, but can the shape of what is be derived in that manner as well? 'Equivalent in all ways' and 'not any larger or smaller' certainly look like sufficient reason considerations. If we do take this spatially there are some interesting consequences for cosmology in terms of sufficient reason and reactions to Parmenides in antiquity.

71 Nor is time something independent for Parmenides.

72 Does Parmenides then argue, as Melissus did (Melissus Fr. 7), that what is is motionless as there is nowhere for it to move? No say G. S. Kirk and M. C. Stokes, Parmenides Refutation of Motion, *Phronesis* 1960, pp. 1–4, Parmenides' argument is 'ontological not physical', motion is ruled out by the strictures against coming to be and passing away in general, not specifically by a lack of further space. I agree the 'ontological' argument is quite general (as are the notions of limit) but this does not preclude Parmenides adding in the physical argument as well. As noted above, Fr. 8, 29–31 has more than is necessary just for the ontological argument and 'ταὐτόν τ' ἐν ταὐτῶι τε μένον καθ' ἑαυτό τε κεῖται χοὕτως ἔμπεδον αὖθι μένει', 'remaining the same and in the same, it lies in accordance with itself, *thus* it remains firmly in place' might indicate a physical argument. Plato's attributes the physical argument to people like Melissus and Parmenides in the *Theaetetus*180e., 'ὡς ἕν τε πάντα ἐστὶ καὶ ἕστηκεν αὐτὸ ἐν αὑτῷ οὐκ ἔχον χώραν ἐν ᾗ κινεῖτα', 'Everything is one and stands still itself in itself having no space in which to move.'

One might argue that just as Plato has made an extreme, unhistorical caricature of the 'everything changes' position in the preceding part of the *Theaetetus*, perhaps this is an unhistorical caricature as well. However, the preceding quotation of 'οἷον ἀκίνητον τελέθει τῷ παντὶ ὄνομ' εἶναι', quoted independently twice by Simplicius (Physics 29, 15 and 143, 8) and this close parallel to Parmenides (Cf. Xenophanes Fr. 26, 1 as well) would seem to rule this out. See Cornford (1935) on the quotation.

VIII

There is a dilemma in both ancient and modern cosmogony which can be expressed like this. If the original state of the universe is homogeneous, and the universe obeys laws which are place/direction invariant, it is then difficult to see how anything interesting will develop in that universe. How would this original symmetry be broken? What sufficient reason would there be for it to be broken in one place or direction rather than another? If the original state of the universe is not homogeneous, we require some further explanation, some sufficient reason as to why it has this particular state as opposed to any other. Modern big bang cosmogony has this problem. If we assume that what expands from the initial state is entirely homogeneous, and that it expands isotropically (equally in all directions), then all that will result will be a larger homogeneous universe, which only differs from earlier stages in being less dense and cooler.[73] The modern solution to this difficulty is to invoke quantum mechanics to break the symmetry. At an early stage of the universe, quantum effects create inhomogeneities in the distribution of matter/energy throughout the universe (the famous 'ripples' in space/time). The areas of greater energy density will then act as gravitational attractors, stars or galaxies will then form around these areas of higher energy density. In reply to the question of why here rather than there, the answer will be that quantum mechanics is fundamentally probabilistic in its nature, and can only give probabilities of energy distribution.

If we take it that Parmenides argues that what exists is a homogenous sphere, then he generates similar problems with cosmogony. As Mourelatos has emphasised, a key aspect of the sphere analogy for Parmenides is the perfect symmetrical nature of the sphere.[74] How can that ever become anything like the cosmos we see without breaking the symmetries and the principle of sufficient reason? Again, I suggest that this is both a critique and a challenge. In particular I believe this is a critique of Anaximander, though it may well bite on the other Milesians as well. Consider the initial stage for Anaximander when we have nothing but the *apeiron*, before the process of separating out of opposites and cosmos formation begins. Assuming we take this to be spatially and temporally unlimited and characterless, we then have an entirely homogenous entity.

73 It is very tempting to give a more dynamic sense to Parmenides by translating 'μεσσόθεν ἰσοπαλὲς πάντηι' (Fr. 8, 44) as 'pushing out from the middle' but given the strictures against motion in the truth part of the poem that would be quite inappropriate. The cosmogonical puzzle works without this. Cf. Mourelatos (1970) p. 123, note 24. One possibility here is that, like a ball, there is equal resistance to being squeezed in all directions.

74 Mourelatos (1970, 2008) p. 128.

One might then ask what sufficient reason is there for when cosmos formation begins and what sufficient reason is there for where cosmos formation begins?[75] To these considerations we can add one outlined above, which is what would we get from the characterless *apeiron*? Is there sufficient reason that we would get e.g. hot and cold as opposed to any other pair? This goes rather beyond Fränkel's view of the relation between Parmenides and Anaximander.[76] Fränkel sees Parmenides as having a philosophical critique of Anaximander. Parmenides insists on limits where Anaximander posits the unlimited, being is complete and finished for Parmenides where the *apeiron* is an *arche* from which the cosmos is steered into existence. I am happy with those contrasts, but there is an interesting sufficient reason critique of cosmogony as well.[77]

This critique may also bite on Thales and Anaximenes. In terms of matter theory, Thales holds that everything can be generated from and destroyed into water, Anaximenes that everything can be generated from and destroyed into air. In terms of cosmogony, we might reasonably assume that the starting point is homogenous water or homogenous air, transformations begin and a cosmos is eventually formed.[78] If so, we then have the same issues of where and when cosmos formation will begin. Superficially, there may seem to be less of a problem about what we get first as transformations from water and air, rather than the *apeiron*. Do we get water into earth or air first, do we get air being compacted or rarified first? A deeper question from the earlier discussion would be whether there is sufficient reason to attribute specific properties to water or air and whether there is sufficient reason to suppose the scheme of transformations.

75 If Anaximander thought the *apeiron* to form a sphere, he might answer 'the middle'. However, it is not clear that he did think the *apeiron* spherical, or that answering the 'middle' solves the problem as the cosmos is not a point at the middle but is differentiated around the middle and sufficient reason would need to be given for that differentiation.

76 H. Fränkel, Studies in Parmenides, in R. E. Allen and D. J. Furley, *Studies in Presocratic Philosophy*, vol II. London: Routledge and Kegan Paul, 1975, pp. 1–47, pp. 25 ff.

77 Especially, one might add, if Anaximander is himself committed to the principle of sufficient reason, which his account of the stability of the earth might indicate, see Aristotle *De Caelo* II/13 295b10 ff., Hippolytus, *Refutation of all Heresies* I, 6, 3, though cf. Simplicius *On the Heavens* 532.13.

78 If we assume otherwise, that there is a mix of water or air with other 'elements' or that there are inhomogeneities, we fall into the other problem of what sufficient reason for this particular distribution?

IX

Parmenides' views also stand as a challenge as well as a critique. Is it possible to formulate a cosmogony that avoids the problems of giving sufficient reasons for symmetry breaking if we assume a homogenous origin, or giving sufficient reason for a supposed distribution if we assume a non-homogenous origin? If there are some important sufficient reason considerations in Parmenides, that may give us some interesting lines to pursue in relation to reactions to his work. Within the confines of this paper I cannot pursue all of those, but I do want to look briefly at Leucippus and Democritus on the issue of where and when cosmoi begin to form. Even here I am conscious of passing over several issues of what happens in the void for Leucippus and Democritus, which are the subject of another paper, Leucippus and Democritus on Like to Like and *ou mallon*.[79] Leucippus and Democritus make interesting use of the *ou mallon* principle. Literally *ou mallon* means 'not rather than' as in 'not a rather than b' and expresses indifference or lack of preference between alternatives. If there is a multiplicity of atoms rather than a single entity, then there is an issue concerning what are the sizes and shapes of these atoms. Simplicius tells us that Leucippus believed there to be an infinite number of shapes and sizes for the atoms on an *ou mallon* basis, that there are no preferred shapes or sizes.[80] One can take that either as a rejection or a reformulation of sufficient reason.[81]

There is no original state for Leucippus and Democritus as the atoms and the void have existed for all time and that in itself is an interesting alternative in relation to Parmenides. There is then no initial disposition of the atoms. However, they do hold that cosmoi come into existence. There is something more to say here, especially as in the Simplicius passage the use of *ou mallon* can be construed as a general principle. Plutarch tells us that for Democritus the distribution of atoms in the void is *ou mallon*.[82] Barnes' paraphrase of Plutarch on

79 The key issue is whether there are any forces acting between the atoms or whether there are just collisions prior to vortex formation.

80 Simplicius *Physics* 28, 8: 'Leucippus supposed there to be an infinite number of atoms that are always in motion and have an infinite number of shapes on the grounds that nothing is such rather than such (διὰ τὸ μηδὲν μᾶλλον τοιοῦτον ἢ τοιοῦτον εἶναι).' Cf. Aristotle *Physics* III/4 203b25.

81 On this see Mourelatos (2005) Intrinsic and Relational Properties of Atoms in the Democritean Ontology. In *Metaphysics, Soul and Ethics in Ancient Thought*, ed. R. Salles, Oxford: Clarendon Press, p. 50.

82 Plutarch, Adversus Colotem 1109a, Democritus: 'ἐν ᾗ διορίζεται μὴ μᾶλλον τὸ δέν ἢ τὸ μηδέν εἶναι, δέν μὲν ὀνομάζων τὸ σῶμα μηδέν δὲ τὸ κενόν, ὡς καὶ τούτου φύσιν τινὰ καὶ ὑπόστασιν ἰδίαν ἔχοντος (Said that thing exists no more than nothing, 'thing' being the name of body

Democritus is that 'There is no more reason for there to be occupied than for there to be unoccupied areas of space.'[83] If that is so, then the distribution of the atoms in the void is *ou mallon* as well, which would only to be expected if there is no original disposition of atoms. If all we then have are collisions between atoms, then the formation of vortices which generate cosmoi will be *ou mallon* with respect to time and place as well. Vortex formation in an infinite void would occur at all times (but not in all places at all times) and in all places (but not at all times in all places). This constitutes a very interesting, relevant and consistent reply to Parmenides. Instead of requiring sufficient reason, Leucippus and Democritus deploy the *ou mallon* principle, to the sizes and shapes of atoms and to the distribution of atoms with the effect that the times and places of vortex formation, and so cosmos formation, are *ou mallon* as well. I will mention but not pursue here the idea that the Epicurean swerve also has the effect of symmetry breaking, makes cosmos formation *ou mallon* with respect to time and place and also moves away from the sufficient reason analysis of Parmenides.

It is also notable that Plato in the *Timaeus* is careful to give sufficient reason for every disposition of the cosmos that the demiurge makes. Of course, there may be other motivations for Plato here as well. Against Anaxagoras, or at least the Anaxagoras Plato depicts in the *Phaedo*, Plato may want to emphasise the breadth and consistency of the teleological explanations he gives. Against the atomists Plato wants to argue for a single well designed cosmos rather than an indefinite number of cosmoi coming about by chance and notably he wants two mathematically precise types of particle rather than the *ou mallon* attitude of the atomists. Against Empedocles, he wants single, well designed species as opposed to the nightmarish Empedoclean scenario of body parts moving around and encountering each other by accident. We might also consider the *Timaeus* as a reaction to Parmenides in giving sufficient reason for each disposition of the cosmos.

X

Parmenides is sometimes held to have made some significant discoveries in astronomy. There is a question of how that could be so, given the strictures of his

and 'nothing' of void, the latter having a nature and substance of its own.' Cf. Aristotle *Metaphysics* 985b4, Simplicius *Physics*, 28, 11–12.

83 Barnes (1982) p. 405.

position as it is normally understood. Earlier I spoke of the importance of the contrast between the σήματα at Fr. 8, 2 and at Fr. 8, 55 and Fr. 19, 3. Parmenides refers to σήματα once more, in Fr. 10:

> εἴσηι δ' αἰθερίαν τε φύσιν τά τ' ἐν αἰθέρι πάντα
> σήματα καὶ καθαρᾶς εὐαγέος ἠελίοιο
> λαμπάδος ἔργ' ἀίδηλα καὶ ὁππόθεν ἐξεγένοντο,
> ἔργα τε κύκλωπος πεύσηι περίφοιτα σελήνης
> καὶ φύσιν, εἰδήσεις δὲ καὶ οὐρανὸν ἀμφὶς ἔχοντα
> ἔνθεν μὲν γὰρ ἔφυ τε καὶ ὥς μιν ἄγουσα ἐπέδησεν Ἀνάγκη
> πείρατ' ἔχειν ἄστρων.
>
> You will know the nature of the aether and all
> of the signs in the aether and the clean, pure lamp of the sun,
> its destructive deeds and the manner of their generation.
> You will learn the works and nature of the wandering round-eyed moon
> you will know the surrounding heaven
> whence it grew and how necessity led and bound it
> to hold the limits of the stars.
> Parmenides, Fr. 10.

As with the earlier contrast, there is nothing in the literature about how this use of σήματα relates to the other uses. The σήματα here could have an astrological sense (LSJ give *sign from heaven, omen, portent* as one group of meanings for σήματα) though I would be more inclined simply to constellation, or perhaps stars and planets.[84] The deflationary view here is that Parmenides uses a fairly standard word, σήματα, for constellations or perhaps portents in the heavens. We can steer by the stars, so they are signs in that sense,[85] tell time by the stars and planets and orientate ourselves in that sense, or arrange our lives according to the portents for signs and steering in a different sense, but there is nothing philosophically significant here.

The alternative view is that σήματα is a highly loaded term for Parmenides and its use here has considerable significance. Given that Parmenides chose to write in poetic form and that commentators have considered, quite rightly, other terms in Parmenides to be loaded this is certainly something that cannot be dismissed out of hand. The contrast between Parmenides' uses of σήματα would then look like this. Fr. 8, 1–4 gives us σήματα which exist independently on the intellectual road. Fr. 8, 53–59 and Fr. 19, 3 then give us a sharp contrast with σήματα which mortals set up themselves. Fr. 10, 1–2 gives us σήματα which are in the physical, perceptual world. In contrast to Fr. 8, 1–4 these are not intellec-

84 Cf. Mourelatos (1970, 2008) p. 25 note 40.
85 Gallop (1984) p. 12–13.

tual signs and in contrast to Fr. 8, 53–59 these signs have an independent existence, not being set up by humans.

Does this then mean that we can have some knowledge of the physical world? Certainly there are verbs of knowing here, εἴσηι, πεύσηι and εἰδήσεις and it is notable that like the verbs of knowing earlier in the poem,[86] they are all second person futures. The problem is that they range over several issues (generation of the sun, growth of the heavens) where knowledge seemed expressly forbidden in the truth part of the poem. It is generally held then that we should take the verbs of knowing here in the same sense as Fr. 1, 28 πυθέσθαι and Fr. 8, 52 μάνθανε in that we learn what the opinions of mortals are but understand that there is a problem with the veracity of those beliefs.[87]

However, one might question whether that does sufficient justice to Parmenides' use of σήματα here, where the σήματα are independent and not set up by humans as in Fr. 8, 55. One possibility here is that while these σήματα do not help us with general cosmological theories, which remain underdetermined, they may help us with specific astronomical phenomena. If so, that may help to solve the puzzle of how Parmenides made some significant specific discoveries in astronomy.

XI

There is evidence that Parmenides made some original and significant contributions to astronomy and cosmology. These are that the moon shines due to the light of the sun, that the morning star and the evening star are the same entity and that the earth is spherical, as well as being central and immobile. Graham has recently reviewed the evidence and has made a convincing case that we can attribute these discoveries to Parmenides.[88]

That Parmenides believed the moon to shine by light reflected by the sun is beyond doubt as we have two fragments which say as much. Both fragments are quoted by Plutarch who makes it clear that Parmenides is talking about the moon in both cases:

> νυκτὶ φάος περὶ γαῖαν ἀλώμενον ἀλλότριον φῶς.[89]

86 πυθέσθαι, Fr. 1, 28, μαθήσεαι Fr. 1, 31.

87 See. Eg. Gallop (1984) pp. 41 and 79.

88 Graham (forthcoming) Ch. 3, cf. Guthrie (1965) vol. II, p. 65.

89 Reading νυκτὶ φάος with A. Mourelatos, "The Light of Day by Night": *nukti phaos*, Said of the Moon in Parmenides B14," in *Presocratics and Plato: Festschrift at Delphi in Honor of*

> The light of day by night, roaming around earth with another's light,
> Parmenides Fr. 14.[90]
>
> αἰεὶ παπταίνουσα πρὸς αὐγὰς ἠελίοιο.
>
> Always looking toward the rays of the sun.
> Parmenides Fr. 15.

Aetius tells us that:

> Thales was the first to say it is illuminated by the sun. Pythagoras, Parmenides, Empedocles, Anaxagoras, Metrodorus likewise.[91]

However, we have no evidence that Thales or Pythagoras said this or if they did it had any effect. The attribution to Pythagoras also looks suspect in the light of modern scholarship which understands Pythagoras largely as a religious figure and recognises that many ideas were later wrongly attributed to him.[92] That leaves us with Parmenides as the first to recognise that the moon shone by light from the sun. Diogenes Laertius says of Parmenides that:

> He was the first to say the earth was spherical and situated in the middle.[93]

Given that Anaximander believed the earth to be drum shaped, and we have little knowledge of other thinkers' views, that is quite plausible, especially given Parmenides' emphasis on sufficient reason.[94] Aetius also tells us that:

> Parmenides placed the morning star first in the aether, which he believed is the same as the evening star and after this the sun.[95]

Graham makes a good case that while the identity of the morning and evening stars was well known to the Babylonians, this does not seem to have been re-

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Charles Kahn, edd. Richard Patterson, Vassilis Karasmanis, and Arnold Hermann, Las Vegas, NV, Parmenides Publishing, 2012, pp. 25–58, D. Graham (forthcoming) and MSS prior to Scaliger's emendation to νυκτιφαΐς.

90 Cf. Aetius, *Placita*, II, 26, 2.

91 Aetius, *Placita*, II, 28, 5.

92 P. Tannery *Pour l'histoire de la science hellène*, 2nd edition. Paris: Gauthiers-Villars et Cie, p. 219, cf. W. Burkert, *Lore and Science in Ancient Pythgoreanism*, Harvard U.P, 1972, C. Huffman, *The Pythagorean Tradition*, in A. A. Long Ed.(1999) The Cambridge Companion to Early Greek Philosophy, Cambridge U.P., pp. 66–87, L. Zhmud, *Pythagoras and the Early Pythagoreans*, Cambridge: Cambridge U.P. 2012.

93 Diogenes Laertius IX, 21.

94 In relation to the shape and position of the earth, Aetius *Placita*, III, 15, 7 tells us that: "For Parmenides and Democritus, as it is equally distant from everything, it remains in a state of equilibrium, having no reason why it should move this way rather than that."

95 Aetius, *Placita*, II, 15, 7.

cognised by the earlier presocratics and this may be an independent discovery on Parmenides' part. Graham also quite reasonably points out that in other cases where the evidence is that a philosopher is the first to propound a theory, we accept it as his own. Why should we not do so in Parmenides' case?

I would add a parallel with treatment of Plato here. It used to be the case that the natural philosophy of the *Timaeus* was attributed in whole to Pythagorean sources, or that the astronomy of the *Timaeus* was attributed to Eudoxus. With the demise of the strong two worlds interpretation of Plato and recent work on the *Timaeus* and Plato's attitude to natural philosophy in general we recognise some Pythagorean influences but do not attribute the whole of the *Timaeus* to the Pythagoreans. So too we can accept the astronomy as Plato's own on the basis that he recorded this astronomy first and there is no evidence or reason to attribute it to anyone else. If we are re-assessing Parmenides' attitude to cosmology, we cannot dismiss evidence that he made important discoveries on the basis that one interpretation of his cosmology would rule out or make implausible any significant discoveries on his part.[96] Especially, one might argue, when there are three perfectly plausible discoveries and the alternative to attributing them to Parmenides is the rather tired and vague strategy of 'it must have been one of the Pythagoreans'.

Is it then, as Guthrie put it in relation to the sphericity of the earth, though his comment could apply to the identity of the morning star and evening star and the fact that the moon reflects the light of the sun:

> A strange freak of history that so fundamental a discovery should have been made by one for whom the whole physical world was an unreal show.[97]

Perhaps we are better off rethinking whether for Parmenides 'the whole physical world was an unreal show'. If the comments above on σήματα are correct and Fr. 10 has independently existing signposts in the heavens, we can see why Parmenides' discoveries were exclusively in astronomy. Owen once wrote that:

> Parmenides did not write as a cosmologist. He wrote as a philosophical pioneer of the first water.[98]

I simply reject this dichotomy.[99] Were there philosophical pioneers of the first water who were also interested in cosmology and had important things to say

96 Cf. Cerri (2011) p. 93.
97 Guthrie, p. 65, note 1.
98 Owen (1960) p. 68.
99 Cf. Sedley pp. 122–3.

about cosmology? Do we really need to look further than Plato and Aristotle here?[100]

XII

Let me return to the issues I raised in my introduction. Why did Parmenides have a cosmology, why was it so long and why did it claim to give a complete account? I have argued here that the opinion section gives us a critique of cosmology rather than doctrine. For that underdetermination critique to work, the cosmology had to demonstrate that it could explain all of the phenomena itself to be at least as good at accounting for the phenomena as all the preceding cosmologies. Other cosmologies might at best equal it, but none could overtake it. This account explains why the cosmology is simply presented and not argued for. It frees us from attempting to explain the contents of the cosmology in terms of preceding cosmologies in the manner of Zeller and Burnet. It frees us from the idea that the cosmology is in some way a best possible or most likely account when the philology is against such a reading of ἐοικότα and it is unclear how for Parmenides there could be a better cosmology, and if there can be, why this particular cosmology is any better. It frees us from the idea that this long cosmology explicates a single, immediately debilitating philosophical error.

I have also argued that the cosmology, in conjunction with the truth part of the poem, raises sufficient reason issues which are significant in themselves and function as a critique of preceding cosmology and a challenge to future cosmology. Can choices of the constituents for the cosmos and their attributes be justified? Can the time and place of cosmogony be justified? Anaximander may be a significant target for those questions, while in relation to the latter question, Leucippus and Democritus have a very interesting answer.

How was it that Parmenides was able to make some significant discoveries in astronomy? Here the contrast between Parmenides uses of σήματα is critical. There are independent signs on the intellectual road, humans set up signs when they attempt cosmology but there are also independent signs in the heavens. While more general cosmological theories may be underdetermined, specific astronomical theories may benefit from examination of these signs.

100 I note in relation to Plato that G. E. L. Owen 'The Place of the *Timaeus* in Plato's Dialogues', *Classical Quarterly*, 1953 pp. 79–95 gives a relatively minor role to the *Timaeus* in his conception of Plato's later development.

How does the argument of the opinion part of the poem relate to the truth part? Here I have offered no specific theory as the interpretation of the truth part of the poem is still strongly contested by many different views. To argue for a particular interpretation of the truth part of the poem would be the work of at least another paper, if not a book. In this paper I have deliberately presented a relatively traditional and conservative view of Parmenides' poem. I have taken *esti* in general to be existential,[101] so the poem is largely about what is and I have taken Parmenides to argue for a numerical monism.[102] As the generally received view, this gives us a basis to start to start thinking about the relation of the two part of the poem. What I have tried to do here is offer a different way of thinking about the truth of the poem and the idea that there are sufficient reason issues concerning cosmogony and cosmology in the truth part. Some points do emerge though from this study of Parmenides on cosmogony and cosmology in relation to thinking about the nature of the truth part of the poem and its relation to the opinion part.

If there are sufficient reason considerations concerning cosmogony and cosmology in both parts of the poem, then those parts may not be so disparate in their aim and function as some accounts have supposed. In particular, both parts I have argued provide a critique of preceding cosmogony and cosmology in their different ways, and a challenge for further thinking in these areas.

Commentators sometimes ask a version of this question: Did Parmenides realise the full consequences of what he argued for?[103] In relation to cosmology and cosmogony, I would say yes he does, very much so. The term *diacosmos* seems brilliantly chosen to make us think about the nature of cosmogony and cosmology, especially in relation to the use of κόσμος at Fr. 8, 52 (the deceptive κόσμος of the goddesses words) and at Fr. 4, 3 (what is cannot be dispersed or gathered together to form a κόσμος).[104] Fr. 10 and Fr. 19 also seem to refer back, in a self-conscious manner, to Fr.8 9–10 (why now for cosmogony) and to issues of change and growth more generally.

Following on from these points, Parmenides is very careful in his choice of words and resonances in relation to cosmogony and cosmology. This should be no great surprise given that Parmenides chose poetry to express himself and

101 As opposed to reading *esti* as veridical (is true) or as a copula (is X). See Gallop (1984) p. 7 for a survey here.

102 As opposed to the predicational nomism of Curd (2004) or the generous monism of Palmer (2009).

103 For contrasting answers, see Guthrie (1965) p. 52 and M. M. Mackenzie Parmenides' Dilemma, *Phronesis* 1982, pp. 1–12.

104 I have also argued that Parmenides was aware of issues related to arguing for a spherical entity.

after the seminal work of Mourelatos.[105] It does have some important implications though. If Parmenides is careful about his use of words, what of his use of the term σήματα at Fr. 8, 2 and at Fr. 8, 55, Fr. 10, 2 and ἐπίσημον at Fr. 19, 3? There are some very interesting contrasts here (independent signs on the route, signs set up by humans, independent signs in the heavens) and if we accept that Parmenides chooses his words carefully, it is harder to run a deflationary line about Fr. 10, 2 and the signs in the heavens.

In relation to the truth part of the poem, at Fr. 8, 53–4 where Parmenides talks of the number of forms mortals introduce, I would question the assumption that Parmenides has a position on which he is unintentionally ambiguous. It is at least a possibility, that in a crucial passage written by someone who chooses his expressions carefully, that he is deliberately ambiguous and throws the onus on the reader to think about the issue.[106]

Parmenides then had much of interest to say about the nature of cosmogony and cosmology, both as critique and challenge, if we recognise the sufficient reason questions he raises and the key contrasts between the different types of σήματα.

105 Mourelatos (1970, 2008).

106 Especially as this comes directly after the warning to be aware of the deceptive *cosmos* of words to follow.