

of the four elements out of which the world and its contents are subsequently constructed. If they are called ‘fire’, ‘air’, and ‘water’, these designations must be meant with some other reference. They are, as one could say, and I suggested at the outset, proto-fire, proto-air, and proto-water, in that they are only somewhat *like*, in being fiery, airy, and watery respectively (see n. 35 below), but lack the determinate structure of, the three actual material elements called fire, air, and water respectively. (Note that in the first set of turnings there is no proto-earth; anything even like earth only emerges when earth itself, the material element, gets generated from the moisture that is said to have the seminal thinking of god in it.)

On this account the originary substance, which is the first material form that god adopts, turns into something called fire (i.e. proto-fire), which is the second material form he/it takes. This proto-fire remains as the ‘seminal thinking’ in the moisture out of which then he, as that proto-fire, constructs the four ordinary elements.

We are now ready to turn to the Stobaeus excerpt giving Chrysippus’ account of three ways of speaking of elements (*SVF* 2. 413).³⁰ Here is a translation (parenthetical numerals mark beginnings of lines in the Greek text in the Appendix):³¹

From Chrysippus. About the elements out of substance,³² he declares himself more or less as follows, in keeping with the leader of his sect, Zeno—saying that there are four elements, fire air water and earth, out of which everything is constructed, both animals

³⁰ It is important to see that these are not three *senses* of the word ‘element’ (*στοιχεῖον*). On each of the three ways of speaking, or usages, what gets counted as an element is conceived as fitting the very same definition: as we have seen (DL 7.136) an element is defined by the Stoics as that from which a thing *first* comes to be, and into which it is *ultimately* reduced. What differentiates the three usages depends on what, on that usage, gets counted as the ‘first’ material body from which all other things come to be. In one way of considering the process of coming to be, this first level can be identified as the four simple bodies (earth, air, fire, and water); in another as the originary material body from which cosmogenesis begins; in yet another, as proto-fire, the very first stage in cosmogenesis. See my comments below in my main text for explications of how one can understand the three different frameworks for counting something as first or lowest material constituent of things.

³¹ In the Appendix, as noted, I provide von Arnim’s text exactly as he prints it, with no departures. In the footnotes there I indicate exhaustively, and explain, which of his and other editors’ emendations I do or do not accept, and which manuscript variants I follow, in departure from von Arnim. The text translated here is therefore not that of von Arnim printed in the Appendix (for the reader’s convenience), but one that includes the departures indicated in my notes to his text.

³² In fact the elements Arius goes on to identify are ‘out of substance only in the first two usages that Arius is about to set forth for us, not the third. Elements on each of the first two usages are made ultimately out of the originary substance by its turnings. Below we learn that this substance itself is called (the) element, in the third of the usages, and it, of course, is not ‘out of substance. It is not ‘out of anything at all, as I have explained, since though composed of god and prime matter, it does not come to be from them. The terminology of ‘out of substance’ at the beginning of the passage evidently reflects the commonplace understanding of an element in application to material stuffs, whereas Chrysippus’ innovative recognition of the originary substance as entitled also to the name of ‘element’, possessing a reasonable justification though it does, also expands our understanding of what the notion of elementhood encompasses.

and plants and the world as a whole and all the things contained in it, and into these they get dissolved. But that which is called an element *par excellence* is so called because the rest are constructed by change out of it as origin (*ἐξ αὐτοῦ πρώτου*) and all are dispersed and get dissolved into it in the end, while this one does not (6) admit of dispersal or reduction into any other. On this way of speaking, fire is called ‘element’ self-sufficiently, since it is not <ranked> along with another.³³ But on the first way of speaking,³⁴ fire is constructive of things along with other <elements>: the first change that happens is the constructing change out of fire into air, the second from the latter into water (11), third the yet further change in a corresponding way of water, once constructed, into earth. And in the other direction, from that [i.e. earth] being dissolved and dispersed, the first dispersal that happens is into water, second out of water into air, and third and last into fire. (All that is

³³ Long and Sedley’s analysis (ii. 278) makes this way of speaking (*λόγος*), which they correctly see is the one that has just been introduced and briefly discussed immediately before (in lines 4–6 of my text printed in the Appendix: ‘But that which is called an element *par excellence* . . . dispersal or reduction into any other’ in my translation), correspond to the first of the three usages listed in resumption by Arius in lines 14–21. But they seem to think that, in adding here the specification of fire as what, on their understanding of this usage, counts for Stoics as ‘the’ element, Chrysippus was introducing his third usage. At any rate, following helpful discussion with Ricardo Salles, that is now how I understand their annotated translation (their textual notes in vol. ii do not provide a suitable context for explaining how they intended Chrysippus to be understood, and their interpretative comment in vol. i is not clear on this point). For them, then, the ‘second usage’ (according to the initial order, which is the first in resumption) is a general characterization (second ‘account’), or sort of definition, of ‘element’, as ‘whatever the other ordinarily recognized elements are constituted out of and ultimately get resolved into’, and the third ‘usage’ is found in the specification of fire as the one that (according to Stoics) fits that description. Long and Sedley likewise seem to find, with respect to the specification of earth air fire and water as ‘elements’ according to the first of Chrysippus’ usages (in the initial order), a further general characterization (or ‘account’) of ‘element,’ indicated in their translation (see the bracketed phrase ‘[i.e. (1) above]’) as to be found in the first line and a half of the text. (In that case, I guess they must have in mind some general idea of an ‘element’ as what comes from ‘substance’ as the account according to which the four usual elements will get counted as elements; this seems to me not to make good sense.) Perhaps, though, ‘[i.e. above (1)]’ is a slip for ‘(2)’, and they mean to count the first application itself, assigning the term ‘element’ to the four usual ones, as the first ‘usage’ without having any separate ‘account’ for the term. But, whichever of these two things they intended, their interpretation mixes *applications* with definitions or general characterizations (I suppose it is possible that Chrysippus could be guilty of this, so I would not want to exclude their interpretation simply on this ground). But on the first option (the one they actually propose, with ‘(1)’ rather than ‘(2)’ in their bracket), if the second ‘account’ is registered as one of Chrysippus’ usages, alongside its specification as another one of them, then the corresponding first account, leading to the identification of four elements, ought to count as an additional ‘usage’ for Chrysippus—resulting in four, not three usages. In fact, it seems far better to take Long and Sedley’s second ‘account’ together with its specification with fire, as constituting a single one of Chrysippus’ three ‘usages’, i.e. as I have insisted, applications, of the term ‘element’. (See DL 7. 136 and my discussion above for the only *definition* the Stoics provide of ‘element’; we do not hear elsewhere about an alternative ‘account’ or ‘accounts’ such as Long and Sedley postulate.) Hence this ‘way of speaking’ with its specification in terms of fire corresponds to the first of the three usages as listed in resumption (the second in the order of prior presentation). (See the next three nn.)

³⁴ The first way of speaking referred to here is manifestly the one mentioned first above, namely the one according to which fire, air, water, and earth are elements. This is also, again manifestly, the usage listed and discussed below, lines 15–19, as the second of the three usages Arius sets out in resumption.

fiery is called fire, what is airy air, the rest similarly.)³⁵ So, according to Chrysippus, element is spoken in three ways: in one way it is spoken of fire, because the rest are constructed by change out of it and get their reduction into it; in a second (16) way, in the way that the four elements, fire air water and earth, are spoken of (since the rest are constructed through some one or some ones or even all of these: through the four as the animals and all the things on the earth are compounds, through two as the moon is constructed through fire and air, through one as the sun, for it is through one only, since the sun is pure fire); in the third way of speaking,³⁶ that is spoken of as element which is originally constituted (20) in such a way as to provide generation from itself methodically up to a conclusion, and out of that [sc. that conclusion] to receive reduction into itself similarly methodically. And he said there were explanations about element of the following sort, that it is both that which is most easily moved through itself,³⁷ and the principle <and> reason and the eternal power possessing a nature such as to move itself downwards to turning and from turning upwards, everywhere cyclically, both consuming (24) everything into itself and in the other direction reconstituting it from itself in an orderly and methodical way.

As I mentioned at the outset, we find no difficulty in understanding the first of the three usages Chrysippus distinguishes, according to this passage: the usage according to which there are four elements of equal standing. These are the four material substances out of which all other materials and all material objects in the actual world are constructed, and into which at their destruction they are ultimately dissolved, while thereafter new materials or material objects get constructed from the same elemental bodies that were previously their material

³⁵ I take it to be the point of this parenthetical explanation to make clear that proto-fire, though (if you like) fiery, is not actually *fire*, and proto-air and -water are airy and watery but not air or water (the ordinary elements everyone is already familiar with)—nonetheless, these proto-substances do deserve to be called, as Chrysippus has just been doing, by those *names*, because of their respective special characters as fiery etc.

³⁶ For Long and Sedley the exposition of this usage (the third according to my count) in what follows is limited to lines 19–21 of my text in the Appendix—they do not print or translate, and say nothing about, lines 21–4. Hence, for them, this usage, which they identify as being constituted simply by a general characterization of an ‘element’ (see n. 33 above), is here only explicated by what they must regard as a paraphrase in terms of ‘providing generation from itself methodically’. On my view, in my main text below, the exposition continues down to the end of the selection, so that quite a bit more is said in explication of this usage; and this phrase is by no means a paraphrase of that general characterization (which in fact, as I understand it, applies to the item that is an element according to the *first* of the usages described in resumption, not at all to what counts as ‘element’ according to the third application). The explication of the third usage discusses not proto-fire (or, as Long and Sedley would say, simply fire, the basic one of the four elements), but the originary substance, as these further remarks in fact make clear. It is a significant mark in favour of my interpretation of this passage over theirs that I include within my analysis the whole of the passage, and do not lop off the final four or so lines as some further separate remark, or set of remarks, of Chrysippus on the general topic of elements.

³⁷ Diels (*Elementum*, 39) sees in this the first of three definitions of what it is to be an element that Arius now appends to the previous discussion of three, in fact, ways of applying the term. It is plain, however, that the following material relates to the third of the three ways of applying the term as explained in lines 19–21 of my text. I therefore think it is better to take this phrase (‘that which is most easily moved through itself’) to go with that material, relating to the third way of applying the term ‘element’.

constituents. These are fire, air, water, and earth. This usage is referred to and explained in lines 2–3, 9–11, and 15–19 of my Greek text.

However, now that we have examined closely Chrysippus' account of the two sets of turnings by which the originary substance gives rise, eventually, to these four elements, one sees at once that in 9–13 (in my translation, 'the first change . . . third and last into fire') we are told, not, as you might have expected, about the *second* set of turnings, whereby, beginning with the creation of the material element earth out of the moisture that has god in it as seminal thought, we then get formed in order the material elements air and fire, with water coming to be out of the remainder of the moisture that arose as the conclusion of the first set of turnings. Rather, we are given there a brief account of precisely that *first* set of turnings. What lines 9–13 give us is a brief run-through of the turnings from proto-fire through proto-air to proto-water, resulting (as the first step of the *second* set of turnings) in the condensation of some of the proto-water into *actual* earth—the first of the material elements of the world as it actually exists. This is followed, as we now know, but is not mentioned here, by the generation out of that moisture, through rarefaction, of *actual* air and *actual* fire, with *actual* water coming to be out of the remainder of the proto-water of the moisture. This *second* series of turnings, apart from the mention of earth, is not described or mentioned in lines 9–13. Instead, as I just said, it is the first set of turnings that we are told about here. This *first* set of turnings begins, as we see reflected here in lines 9–13, from proto-fire: there, we are told, 'the first change that happens is the constructing change out of fire into air'.³⁸ But, as we now know, proto-fire is itself preceded in existence by the originary substance, the flash: the *absolutely* first turning was from that originary substance.

Accordingly, we can now also see that the usage Chrysippus takes notice of second in order here, at the beginning of the passage, according to which something called 'fire' is the sole element, an element *par excellence* and self-sufficiently,³⁹ refers to the proto-fire of the *first* set of turnings. This raises a question that it will be worthwhile to pursue briefly. It is true that the *first* thing that comes to be when the originary substance begins to turn itself is proto-fire, and the Stoic definition of element emphasizes that on any usage an element should be what things *first* come from (in this case, the ordinary elements come to be *first* from proto-fire, in the series (proto-) fire–air–water. But how are we to understand (proto-)fire as the *sole* element, on this usage (the sole element from which the ordinary elements come to be)? That seems to imply that ordinary fire, air, water, and earth have proto-fire as their only constitutive element. One might ask, however, why one should count fire as the *sole* constitutive material

³⁸ So, as we can now see, the addition in DL 7. 142 of '*from fire* through air into moisture' to the mere 'through air into water' of 7. 136 is very significant. This indicates, as we see here in our Stobaeus text, that these changes begin from proto-fire.

³⁹ The second usage is referred to and explained in lines 4–9 and 14–15 of my Greek text: 'But that which is called . . . along with another' and 'in one way . . . reduction into it' in my translation.

of the things that come from it, according to this second usage? What about proto-air and (even more) proto-water, i.e. that moisture in which, we are told by Diogenes Laertius, the seminal thinking of the world stays behind, making matter suitable for its purposes in generation of the world through the generation, to begin with, of the actual four material elements? Ought they not also to be counted as elements according to this second usage—so that on this usage there would be three elements, not four as on the first usage, and not, as Arius tells us Chrysippus in fact claimed, just one?

In addressing this question we need first to take notice of the fact that the descriptions I have cited above from Diogenes Laertius of the first set of turnings (7. 136 and 142), resulting in the moisture from which then the generation of the four elements begins, are presented by him as giving the view not only of Chrysippus but of Zeno and indeed other Stoics. In 136, for example, Diogenes concludes the passage I quoted with, ‘Zeno speaks about them [sc. the four elements] in *On the Whole*, and Chrysippus in the first book of his *Physics*, and Archedemus in a work *On Elements*.’ To these authors in the passage I quoted from 142 about the generation and destruction of the cosmos, he adds references to works of Posidonius, Cleanthes, and Antipater.⁴⁰ Indeed, the parallel text to 142 (SVF 1. 102) that I cited in n. 27, also from Stobaeus, is prefaced with ‘Zeno declared himself expressly as follows’: there is no reference there to Chrysippus, or to any of these others, at all. Of course, Chrysippus wanted to follow Zeno in his own ordering of the first set of turnings, as well as in the second set. But we must be ready to interpret him in ways that in fact distinguish his view from Zeno’s. He himself would maintain that his own view is the one that Zeno really had in mind all along. But we already know that he rejected any idea that the originary substance was *fire*, as suggested in 142, either in the sense of the ordinary element or in any other sense that implies a substance flaming up in any way; and we can expect other related ‘precisifications’. In speaking of the turnings in 136 Diogenes only uses the term ‘element’ in connection with the usual four, and leaves one with the impression that the references to air and water in his exposition of the first set of turnings, leading to the further turnings that form the four, are just references to two of these same four elements. Presumably that in fact faithfully reflects Zeno’s own innocence. He did not mind that, strictly speaking, there *was no* elemental air or water, not to mention any fire, in existence before the completion of the second set of turnings. As we have seen, Zeno did not distinguish, as Chrysippus took great care to do, between the originary substance as a flash, not some fire of the ordinary elemental kind, even the purest version. Accordingly Zeno may, as I have already suggested, have loosely and naïvely spoken of the originary substance as fire, which then turned through air

⁴⁰ It is worth noting that Plutarch, quoting or paraphrasing from the first book of Chrysippus’ *Physics* (*Stoic Self-Contradictions* 1053a = SVF 2. 579), confirms that the details reported in 142 represent Chrysippus’ own view.

into water or moisture, and remained inside the moisture as a seed, working on it to generate from it the element earth by condensation, and the elements air and fire by rarefaction, leaving the rest of it to be or become the element water.

Chrysippus knew that, as stated, this made no good sense. In his own version, then, he must have clarified as follows. Actually, as we have seen, the originary substance is a flash, not a fire; the first turn out of it, as world-formation gets under way, is to proto-fire, with further turnings through proto-air to proto-moisture, at which point the four elements come into being by condensation and rarefaction of the proto-moisture—an additional set of turnings. Wishing then to distinguish the first set of turnings from the second by marking a distinct way of applying the term ‘element’ from that according to which the four basic material bodies make up all the world’s actual materials, he declared (in our Arius excerpt) that *only* the body (namely, god as proto-fire) produced at the first of these turns should be counted as an element in that second way of applying the term. Apparently his thought was as follows. Anything deserving the name ‘element’ must be some stuff out of which things are made, as I noted just now. The things that are to be made in these turnings are, ultimately, the four ordinarily recognized elements. Even if these result from the condensation and rarefaction of proto-water or moisture, it would be a mistake to say that they are made *out of* water or out of anything watery, as in any sense a stuff they are made of (in the strictest sense, they and everything else is made out of the originary substance, of course). Proto-water is only a preliminary, short-lived transition-point in the turning of proto-fire so that the four elements get generated. The same applies to proto-air. Zeno’s insight had been that it is the power and energy of fire that underlies all the actual materials of the cosmos and all material objects. The truth of this insight requires that in our account of world-formation we make this power and energy, and only it, as proto-fire, the material basis for the four elements. It is god as proto-fire that is spread through the four ordinary elements as what, in their different material constitutions (depending on their varying densities), they are made out of.

We should conceive proto-fire, proto-air, and proto-water in the following way. The originary substance turns itself *first* by creating proto-fire, as a stuff that is by its material nature so structured as to possess the fostering and generative powers that are needed for subsequent stages of world-formation. The originary substance does this by, so to speak, overlaying over itself just those qualities that are needed for this task. It thereby ‘becomes’ something like fire by giving itself these further fiery and fostering characteristics, ones that it needs to have in order to complete Zeus’s plan of world-creation. This new substance cannot be called ‘fire’ in any strict sense, as I have already observed. But it does deserve to be so designated because of its powers of generation and sustenance.⁴¹

⁴¹ That is surely why it is precisely at this point in the exposition, at line 13, where proto-fire has been introduced for the first time, that Arius or Chrysippus points out that he is using the term ‘fire’ in this connection to refer to whatever is fire-like (and so, too, for ‘air’ and the others).

This ‘fire’ produces moisture (again by overlaying everywhere over itself watery characteristics), in which it ‘stays behind’ as ‘the seminal thinking of the world’ (see DL 7. 136, cited above)—in the first instance, as the seminal thought of the four elements that it is immediately going to produce, using its generative powers. It remains in all four of these elements, and must remain in them as what they are made out of, in order for *those* elements to have the distinctive powers of generation and construction (as with fire and air) or more or less passive constitutability (as with earth and water) that, on Stoic theory, must belong to them, if they in turn are to play their roles in world-constitution. Proto-air is a mere stage through which proto-fire must pass as it produces proto-water (‘fire’ has to go through the more dense stage marked by proto-air, before it can become proto-water). Proto-water is also itself only a temporary stage in proto-fire’s (and the originary substance’s) ‘turning’ downward to world-generation. Proto-fire needs proto-water as a residing point in which its own generative powers can reside, while carrying out its generative activities, through condensation of that material in some parts of it (leading to the existence of earth), and through rarefaction of other parts of it (leading to air and fire), with the creation of proper water from the remainder. Thus, as I said, proto-fire, and only proto-fire (among the three proto-stuffs) counts as *the element*, on this second usage of the term: it is all by itself what the usually recognized four elements of the material world are made of.

Let us attend now to the third of Chrysippus’ ways of applying the term ‘element’. This is referred to in lines 19–24 of my Greek text (‘in the third way of speaking . . . in an orderly and methodical way’ in my translation). Two striking facts about this usage and about what on it gets spoken of as an element deserve immediate notice. First, according to this passage, whereas in both the first two usages the element or elements include something called ‘fire’, in reference to the third there is, quite strikingly, no mention of fire. Second, we should note the use of the dative ὁδῷ, which I have translated ‘methodically’, which appears three times in the exposition of the third usage (and nowhere in the exposition of the other two usages). The first two times it modifies the ‘generation’ of unspecified things from, and their ‘reduction’ into, the element on this usage. In his exposition, earlier in our excerpt, of elements according to both the other usages Arius Didymus has indeed spoken similarly of ‘construction’ out of and ‘dissolution’ into elements, but in neither case do we find this interesting qualification, ‘methodically’. Moreover, in the third appearance of ὁδῷ we read of ‘the principle <and> reason and the eternal power . . . both consuming everything into itself and in the other direction reconstituting it from itself in an orderly and methodical way’. We have already examined passages where god is described when the world has been conflagrated as being all by himself, having consumed all substance (DL 7. 137, 136), and subsequently generating it all out of himself, and another passage (Aetius in SVF 2. 1027) which speaks of god, when the world has been conflagrated, as ‘proceeding *methodically* to the

generation of the world'. So there can be no doubt that in this third way of applying the term Chrysippus means to be assigning the title of element to god, as the originary substance, i.e. to prime matter as qualified by having god or reason spread everywhere through it. Arius has prepared the way for us to recognize this third usage in what he has said in lines 9–10 ('the first change that happens is the constructing change out of fire into air'). I have argued above that this is a reference to the first change out of proto-fire. If we bear in mind, as we ought to in reading about Chrysippus' views, that proto-fire is a substance existing as the first step in the reconstruction of the world, and is not the originary substance itself that exists when the world has been conflagrated, it must be evident that lying behind it stands that originary substance, the flash.

This third way of speaking of an element, according to which the originary substance, as the absolutely first stuff out of which things subsequent to it in cosmogenesis are made, is the sole element, makes very good sense. It is out of this, by the first of those methodical turnings, but (it appears) not yet a *constructing* change (a change *κατὰ σύστασιν*), that proto-fire comes to be.⁴² Since proto-fire is what (with their different consistencies) elemental fire, air, water, and earth are made out of (by 'constructing' changes), one can therefore well say that, in a certain sense, this originary substance is the most basic material body there is, the one out of which, ultimately, everything in the world is constituted. As such, given the Stoic definition (DL 7. 136) of element as that 'out of which things that come to be, first come to be, and into which they are in the end reduced', we can entirely appropriately give it the title of element.

Here we must bear in mind the Stoic theory of through-and-through interblending of bodies. Just as both the two principles are everywhere where

⁴² Arius speaks of the 'turns' both from proto-fire through proto-air to proto-water, and from proto-water to the four ordinary elements, as 'constructing changes' (see *συνίστασθαι κατὰ μεταβολὴν* in lines 4–5, *τῆς . . . κατὰ σύστασιν . . . μεταβολῆς* in line 10, and *συνίστασθαι κατὰ μεταβολὴν* in line 15). But in connection with the first turn of all, from the originary substance to proto-fire, he does not speak in that way. He says only that the originary substance itself is 'constituted' (*συνέστηκεν*)—it is not *constructed*, since that implies a coming-into-being, while this substance is eternal—so as to provide generation methodically all the way to an end and dissolution methodically back again into it (lines 20–1), and that it 'moves itself downwards to turning' (line 23). He does not call the move a constructing change. That might suggest that proto-fire, the result of the first turn, is not to be thought of as constructed out of the originary substance, but to have some other relation to it, even though it comes from it and eventually gets reduced to it. Perhaps this difference in language is not significant. But maybe it is. The first turn (the first 'move') is to proto-fire. In subsequent moves, first proto-fire turns so as to engage in a constructive change that produces other proto-elements, ending with proto-water, and then proto-water gets changed so as to construct ordinary earth, air, fire, and water. But the move from the originary substance to proto-fire yields the first material actually *within* the cosmos now already in formation. Perhaps Chrysippus' idea is that all *constructing* changes start from there, because all processes of construction must be carried out within the cosmos, or within the cosmos-in-formation, from materials already on hand. Construction only begins once proto-fire is on hand. That means that, though proto-fire materially derives, as everything else does also, from the originary substance, it does not get constructed out of it, but comes into being rather as the necessary presupposition to all constructed forms of matter.

either of them is, so also the originary body is everywhere they are too, and, as the world gets generated and the ordinary four elements come into being, anywhere any element is, everywhere there, there will also be several distinct other bodies, including proto-fire as well as the originary substance. Though, as we see in our Stobaeus passage (lines 16–19), the sun is made out of only one element, fire, and the moon of two, fire and air, most material things have, in differing proportions, all four. So in the case of the latter, they have everywhere in them all four material elements in some or other proportions, plus proto-fire, plus the originary substance (all of which count as elements, on one of Chrysippus' usages or another), plus reason and prime matter (which, of course, are not elements at all according to any proper usage, but principles).⁴³

⁴³ I thank Prof. Ricardo Salles for providing the incentive to write up these ideas, which were first presented at a conference on 'God and the Cosmos in Stoic Philosophy' organized at the Instituto de Investigaciones Filosóficas of the Universidad Nacional Autónoma de México, 3–5 July 2006. I have profited greatly from the thorough discussion of the paper on that occasion, and thank particularly David Hahm, Brad Inwood, Thomas Bénatouïl, and Professor Salles himself, for enabling me to take into account issues that they raised in discussion. In addition, I owe Prof. Salles thanks for his acute written comments, as editor of this book, on the penultimate version. Responding to them helped me to improve the chapter at a number of places. I also thank Prof. Katerina Ierodiakonou for arranging an unusual mid-summer colloquium at the Department of Methodology, History and Theory of the Sciences of the University of Athens later in the same month, at which I benefited from the opportunity to air my ideas before a large and highly discriminating group of Greek and foreign ancient philosophers and their students. I owe special thanks to Michael Frede for several excellent criticisms and suggestions, confronting which led to important improvements. Finally, I thank Prof. Panos Dimas and his colleagues and students at the University of Oslo for a stimulating and helpful discussion when I gave the paper there in Sept. 2006. Thanks are likewise due for further discussion after I delivered the paper in Budapest at the philosophy department of the Central European University in Jan. 2009. I particularly thank Prof. Dimas and Prof. Gábor Betegh for their queries and suggestions, which led to significant improvements in this final version.

APPENDIX

(SVF 2. 413) Stobaeus, *Eclog.* I,
p. 129. 1–130. 20 Wachsmuth

Χρυσόππου. περὶ δὲ τῶν ἐκ τῆς οὐσίας στοιχείων τοιαῦτά τινα ἀποφαίνεται, τῷ τῆς αἰρέσεως ἥγεμονι Ζήνωνι κατακολούθων, τέτταρα λέγων εἶναι στοιχεῖα <πῦρ, ἀέρα, ὕδωρ, γῆν, ἐξ ὧν συνίστασθαι πάντα καὶ ζῶα>^a καὶ φυτὰ καὶ τὸν ὄλον κόσμον καὶ τὰ ἐν αὐτῷ περιεχόμενα καὶ εἰς ταύτα διαλύεσθαι. τὸ δὲ <πῦρ καὶ>^b κατ’ ἔξοχὴν στοιχεῖον λέγεσθαι διὰ τὸ ἐξ αὐτοῦ πρώτου τὰ λοιπά συνίστασθαι κατὰ μεταβολὴν καὶ εἰς αὐτὸν ἔσχατον πάντα χεόμενα διαλύεσθαι, τοῦτο δὲ μὴ ἐπιδέχεσθαι τὴν εἰς ἄλλο χύσιν ἢ ἀνάλυσιν> [συνίστασθαι δὲ ἐξ αὐτοῦ τὰ λοιπὰ καὶ χεόμενα εἰς τοῦτο ἔσχατον τελευτᾶν· παρὸ καὶ στοιχείον λέγεσθαι, ὃ πρῶτον ἔστηκεν οὕτως, ὥστε σύστασιν διδόναι ἀφ’ αὐτοῦ καὶ αὐτὸν τῶν λοιπῶν χύσιν καὶ διάλυσιν δέχεσθαι εἰς αὐτό.]^c κατὰ μὲν τὸν λόγον τοῦτον αὐτοτελῶς λεγομένου τοῦ πυρὸς στοιχείου· οὐ μετ’ ἄλλου γάρ·^d κατὰ δὲ τὸν πρότερον καὶ μετ’ ἄλλων συστατικὸν εἶναι, πρώτης μὲν γιγνομένης τῆς ἐκ πυρὸς κατὰ σύστασιν εἰς ἀέρα μεταβολῆς, δευτέρας δ’ ἀπὸ τούτου εἰς ὕδωρ, τρίτης δ’ ἔτι μᾶλλον κατὰ τὸ ἀνάλογον συνισταμένου τοῦ ὕδατος εἰς γῆν. πάλιν δ’ ἀπὸ ταύτης διαλυομένης καὶ διαχεομένης πρώτη μὲν γίγνεται χύσις εἰς ὕδωρ, δευτέρα δὲ ἐξ ὕδατος εἰς ἀέρα, τρίτη δὲ καὶ ἔσχάτη εἰς πῦρ. Λέγεοθαι (&ε;^e πῦρ τὸ πυρῶδες πᾶν καὶ ἀέρα τὸ ἀέρωδες καὶ ὄμοίως τὰ λοιπά.

^a This addition is due to Diels, and I accept it (so do Long and Sedley). Something has obviously dropped out of the text here (the sentence makes no grammatical sense as it appears in the MSS); the full list of the usual four elements given below in lines 17–18, with the explication in 17–18 of how animals and everything else on the earth are composed from them, justify the details of Diels's addition.

^b This is an addition of Usener (Heeren had emended with the addition of *πῦρ* without *καὶ*), accepted by Diels, which Long and Sedley argue is unnecessary, and also distorts the structure of the passage. I follow Long and Sedley in not accepting any emendation here. In this sentence Arius/Chrysippus is explaining the ground on which something would deserve to be called 'element' *par excellence*; below, lines 8–9, he then tells us that this thing is 'fire' (i.e. proto-fire, as I explain in my discussion in the main text). Usener's/Heeren's addition is premature.

^c Wachsmuth detects here an intrusion into the text of a marginal note by a reader (he detects a similar one further on in Stobaeus, at p. 154. 24 ff.). I accept this deletion. It seems just to repeat in somewhat different words what has just been said in lines 4–6.

^d The phrase *οὐ μετ’ ἄλλου γάρ* appears in the MSS after *πρότερον*, line 9, where it certainly makes no sense. It was first moved here by Heeren, and is so printed by Diels, Wachsmuth, von Arnim, and Long and Sedley. The genitive absolute in the phrase beginning *κατὰ μὲν τὸν λόγον τοῦτον*, with the matching *κατὰ δὲ τὸν πρότερον* in 9, which is followed by the infinitive *εἶναι* (with *τὸ πῦρ* to be understood as subject), seems anacoluthic; Diels at first wondered whether we oughtn't to read *γίγνεσθαι* for *γάρ* in the transposed phrase, since that would provide an infinitive to attach the genitive absolute to, so as to match the infinitive in the following clause and remove the anacoluthon. This seems to me attractive, though radical; but in his Addenda (p. 854) Diels points to what he seems to take to be the same matched genitive absolute and infinitival clauses at p. 144. 6 W ff. (in another Stoic report, identified by Diels as Arius Didymus fr. 19), and concludes that no emendation is needed. Reluctantly, I follow him in this.

^e Some connective is required here by the grammar; this addition is Heeren's proposal, accepted by all subsequent editors. I accept it.

Τριχῶς δὴ λεγομένου κατὰ Χρύσιππον τοῦ στοιχείου, καθ' ἔνα μὲν τρόπον τοῦ πυρός, διὰ τὸ ἐξ αὐτοῦ τὰ λοιπὰ συνίστασθαι κατὰ μεταβολὴν καὶ εἰς αὐτὸν λαμβάνειν τὴν ἀνάλυσιν· καθ' ἔτερον δέ, καθὸ λέγεται τὰ τέσσαρα στοιχεῖα, πῦρ, ἄλρη, ὕδωρ, γῆ (ἐπεὶ διὰ τούτων τινὸς ἡ τινῶν ἡ καὶ πάντων τὰ λοιπὰ συνέστηκε, διὰ μὲν τῶν τεττάρων, ὡς τὰ ζῷα καὶ τὰ ἐπὶ γῆς πάντα συγκρίματα, διὰ δυοῖν δέ, ὡς ἡ σελήνη διὰ πυρὸς καὶ δέρος συνέστηκε, διὸ ἐνὸς δὲ ὡς ὁ ἥλιος, διὰ πυρὸς γὰρ μόνου, ὁ γὰρ ἥλιος πῦρ ἐστιν εἰλικρινές), κατὰ τρίτον λόγον λέγεται στοιχεῖον***^f ἔναι τὸ πρῶτον συνέστηκεν οὕτως, ὥστε γένεσιν διδύναι ἀφ' αὐτοῦ ὅδῷ μέχρι τέλους καὶ ἐξ ἑκείνου τὴν ἀνάλυσιν δέχεσθαι εἰς ἑαυτὸν τῇ ὁμοίᾳ ὅδῳ. Γεγονέναι δὲ ἐφησε καὶ τοιαύτας ἀποδόσεις περὶ στοιχείου, ὡς ἔστι τὸ τε διὸ αὐτοῦ εὐκινητόταπαν καὶ ἡ ἀρχὴ (καὶ ὁ σπερματικὸς)^g λόγος καὶ ἡ ἀΐδησ δύναμις φύσιν ἔχουσα τοιαύτην, ὥστε αὐτῆν^h τε κινεῖν κάτω πρὸς [γῆν]ⁱ τὴν τροπὴν καὶ ἀπὸ τῆς τροπῆς ἀνω πάντῃ κύκλῳ, εἰς αὐτήν τε πάντα καταναλίσκοντα καὶ ἀφ' αὐτῆς πάλιν ἀποκαθιστᾶσα τεταγμένως καὶ ὅδῷ.

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^f Wachsmuth saw a lacuna here, and von Arnim agreed. I think that was a mistake. The MSS text makes good enough sense without emendation. I follow Long and Sedley here.

^g Some addition is obviously necessary here; Usener proposed the one here printed (accepted by von Arnim). Meineke and Diels, more modestly and more reasonably, suggested simply adding (καὶ ὁ). I follow Meineke and Diels. (Long and Sedley print this Stobaeus text only down to ὅδῷ in my line 21, so they offer no help here; they omit the important last lines.)

^h The MSS here read γῆν; the correction is due to Wachsmuth: this is reasonable and gives what ought to be the right sense. I accept this emendation.

ⁱ Hirzel first proposed deleting this word, and he is followed by Wachsmuth. I accept Hirzel's deletion. The text of this whole clause is transmitted in confused form in the MSS, some of which give τροφῆν and τροφῆς instead of τροπῆν and τροπῆς, no doubt in error.

5

Chrysippus on Conflagration and the Indestructibility of the Cosmos

Ricardo Salles

The present chapter deals with Chrysippus' claim that the cosmos 'should not be said to die' (*οὐ ρήτεον ἀποθνήσκειν*: Plut. *De Stoic Rep.* 1052C, *SVF* 2. 604, LS 46E, quoted below). As I shall argue, the claim is of great significance for our understanding of early Stoic cosmology because it reflects a clash within the school between two conceptions of the conflagration (*ἐκπύρωσις*): Chrysippus' own conception and that of Cleanthes. The two parties agree that there will be a conflagration. The cosmos will be totally consumed by fire, which will burn until it exhausts all the available combustible matter. Also, they both maintain that the conflagration is a periodical phenomenon. It will be followed by a new cosmogony and a reconstitution of the individual entities that existed earlier. Indeed, the whole cosmos will be restored to its previous condition, but will burn up again at some point causing a new conflagration, and so on *ad infinitum*. As joint proponents of the conflagration and the everlasting recurrence of everything, Cleanthes and Chrysippus differed from other major Stoics who denied, or at least questioned, that a conflagration will ever occur.¹ The important issue on which Cleanthes and Chrysippus departed from each other is that of whether the conflagration entails the periodical *destruction* of the cosmos. In other words, is the cosmos periodically destroyed at each conflagration? Cleanthes believes it is. Given that the fire of the conflagration, i.e. flame, is, by its very nature, destructive of its fuel, the conflagration will destroy the whole cosmos. This destruction is not permanent, because a new cosmogony will begin and an identical cosmos will

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¹ Notably Zeno of Tarsus, Diogenes of Babylon, Panaetius, and Boethus. See Cic. *ND* 2. 118, Eus. *Praep. Ev.* 15. 18. 2 (*SVF* 3 Zeno Tarsiensis 5) and Philo, *Aet.* 76–8 (*SVF* 3 Diogenes Babylonius 27).

be created. But, however momentary it may be, it is a destruction nevertheless. As we shall see in section 3, there is strong evidence for this view in Cleanthes. Chrysippus, however, opposed this idea. In his formulation, the cosmos will not periodically ‘die’ at the conflagration—and of course if it does not die, it will not be periodically destroyed either, because the cosmos is an animal and animals are destroyed only if they die.² The flame of the conflagration will certainly destroy complex bodies such as plants and animals. But this consumption is not destructive of the cosmos as a whole because, Chrysippus thinks, it is not destructive of its most basic constituents, namely, the four elements. I argue that the conflict between these two Stoics is ultimately rooted in a difference between their elemental theories on the question of how fire acts upon the other elements.

In section 1, a reconstruction is given of Chrysippus’ arguments. Its strength resides in the fact that it is based on Cleanthean premisses—theses that Cleanthes either defends as tenets of his own cosmology or that are fully consistent with his cosmology. In consequence, Chrysippus’ argument reveals a tension in Cleanthes’ cosmology: the latter cannot consistently claim, as he actually does, that the cosmos will be *destroyed* at the conflagration. Sections 2 and 3 are devoted to exploring the theses in Cleanthes that seem to generate this inconsistency. In section 4, I explain how this conflict comes from a difference in the elemental theories of Cleanthes and Chrysippus. In the Appendix, I explain how Chrysippus’ argument differs from two other Stoic arguments for the indestructibility of the cosmos.

1. CHRYSIPPUS’ ARGUMENT IN PLUTARCH, STOIC. REP. 1052C

As is normally the case in *De Stoicorum Repugnantiis*, Plutarch quotes Chrysippus for polemical purposes. The present text is part of a longer passage devoted to establish how the conjunction of several theses defended by Chrysippus yields the incoherent idea that there is and there is not such a thing as ‘nourishment for Zeus’. According to 1052D (in Cherniss’s translation, slightly modified):

So he is in conflict with himself not only because in the former passages [from Chrysippus’ *De Providentia* quoted at 1052B–C] he declares that, except for the cosmos and Zeus, there is nourishment for the rest of the gods, but in the latter [quoted at 1052C–D] he

² See Cleanthes *ap.* Cic. *ND* 2. 32 *animantem esse mundum* and Chrysippus *ap.* Plut. *De Stoic. Rep.* 1053B (*SVF* 2. 605, LS 46F). See also DL 7. 139 (on Antipater) and 142 (on Chrysippus). I use the term ‘animal’ and not ‘living thing’ (which is also a standard translation of $\zeta\hat{\omega}\sigma$) because in Stoicism not all living things are ensouled, e.g. plants. Cf. the evidence on Stoic plants in *SVF* 2. 708–13.

states that there is nourishment of the cosmos *also*, but even more because he says [at 1052D] that the cosmos grows by getting nourishment from itself.³

The argument for the immortality of the cosmos occurs in one of the passages from *De Providentia* that Plutarch uses to claim that for Chrysippus there is nourishment for Zeus:

ἐν δὲ τῷ πρώτῳ περὶ Προνοίας τὸν Δία φησὶν αὐξεσθαι, μέχρι ἂν εἰς αὐτὸν ἄπαντα καταναλώσῃ· ἐπεὶ γὰρ ὁ θάνατος μὲν ἔστι ψυχῆς χωρισμὸς ἀπὸ τοῦ σώματος, ἡ δὲ τοῦ κόσμου ψυχὴ οὐ χωρίζεται μὲν αὐξεται δὲ συνεχῶς μέχρι ἂν εἰς αὐτὴν ἔχαναλώσῃ τὴν ὑλην, οὐ ρήγτεον ἀποθνήσκειν τὸν κόσμον.

In the first book of *De Providentia* he says that Zeus goes on growing until all things have been consumed in his growth: ‘For, since death is separation of soul from body and the soul of the cosmos is not separated but goes on growing continually until it has completely absorbed its matter, the cosmos should not be said to die’.

One assumption of the argument—implicit in the idea that the cosmos has soul and body—is that the cosmos is an animal. From there the argument seems to proceed as follows: (1) for any animal, death is the separation of its soul from its body, and (2) at the conflagration, the soul of the cosmos absorbs, or consumes,⁴ its own body or matter (*ὑλη*), but (3) the consumption or absorption of something A by something B, and the separation of B from A are two different processes. Therefore, at the conflagration the cosmos does not die (and hence is not destroyed as Cleanthes maintains). The soundness of the argument requires a proof of the thesis upheld in premiss (3) that the processes of separation and consumption envisaged in the argument are sufficiently different from each other to guarantee that the latter, in contrast with the former, is compatible with the persistence of the animal as a whole. I leave this issue for section 4 and concentrate on premiss (1).

What is the soul of the cosmos? And what is its body? In Stoicism, the soul of the cosmos is fire in the form of heat. There is a specific reason for this. The heat that the stars irradiate exerts on the cosmos an activity analogous to the one exerted on an animal by its soul. It holds it together and promotes thereby its persistence.⁵ In Stoic technical terminology fire as heat is the cohesive cause, or *συνεκτικόν αἴτιον*, of the cosmos in the same way as the soul of an animal is

³ οὐ μόνον οὖν ἐν ἐκείνοις τοὺς ἄλλους θεοὺς ἀποφαίνων τρεφομένους πλὴν τοῦ κόσμου καὶ τοῦ Διὸς ἐν τούτοις δὲ καὶ τὸν κόσμον λέγων τρέφεσθαι μάχεται πρὸς αὐτὸν ἀλλ' ἐπι μᾶλλον, ὅτι τὸν κόσμον αὐξεσθαι φησιν ἐξ αὐτοῦ τρεφόμενον.

⁴ One MS (g) has *εἰς αὐτὴν καταναλώσῃ* which is the verb used by Plutarch in the present passage immediately before the quotation. Cherniss and Long and Sedley read with the rest of the MSS *εἰς αὐτὴν ἔχαναλώσῃ* as printed above. In *LSJ s.v.* the two verbs are given roughly equivalent meanings. Cf. *ἀναλίσκω* in DL 7. 136 (*ἀναλίσκων εἰς ἑαυτὸν τὴν ἄπασαν οὐσίαν*), cited and discussed by Cooper in Ch. 4 (pp. 000–00).

⁵ In Cicero’s formulation at *ND* 2. 28: ‘the cosmos itself owes its continued preservation for so long a time to the same or a similar substance’, namely heat (*calor*): *mundum etiam ipsum simili parique natura in tanta diuturnitate servari*. For the idea that the activity of Stoic cohesive causes is temporally coextensive with their effect, see notably Clem. *Strom.* 8. 9. 33. 1–2 Stählin *et al.*

the cohesive cause of the animal. Now, if heat is the soul of the cosmos, what is its body or matter? In general, Stoic matter is what receives the action of a cohesive cause. At the highest level of abstraction, it is the ultimate recipient of the action of the active principle or god.⁶ At a cosmological level, the recipients of this action are the entities that everything in the cosmos is made of and made from: earth, water, air, and fire both in the form of the individual portions of heat that we find in animals, and in the form of flame, which may have salutary and beneficial effects on animals.⁷

At least premisses (1) and (2) express Cleanethean views. The first premiss is attested for Cleantes in *ND* 2. 23 (quoted in the next section) and I shall consider the evidence for (2) and (3) in sections 3 and 4 respectively. I begin by looking at the reasons Cleanthes adduces for thinking that the heat is indeed the cohesive cause of cosmos and, hence, its soul.

2. HEAT AS THE COHESIVE CAUSE OF THE COSMOS

Although the thesis is accepted by a number of different Stoics, it is developed in greatest detail in *ND* 2. 23–32, which is generally regarded in current Stoic scholarship as an account of Cleanthes' cosmology.⁸ The argument is given in sections 23–8. In what follows I quote (in Long and Sedley's translation) the parts of the text that are more directly relevant to the discussion.

It is a fact that all things which undergo nurture and growth contain within themselves a power of heat without which they could not be nurtured and grow. For everything which is hot and fiery is roused and activated by its own movements, but a thing which is nourished and grows has a definite and regular movement; as long as this remains in us, so long as sensation and life remain, but when heat has been chilled and extinguished,

(*SVF* 2. 351, LS 551 1–2), Plut. *De Stoic. Rep.* 1053F (*SVF* 2. 449, LS 47M1) and Alexander of Aphrodisias, *De Mixtione* 223. 25–36 Todd (*SVF* 2. 441, LS 47L). For the notion of the soul of the cosmos as cohesive of the cosmos in the Old Academy see Sedley 2002: 63 and Kupreeva in Ch. 6 (pp. 000–00).

⁶ See DL 7.134 (*SVF* 2. 299–300, LS 44B), Alex. *Mixt.* 224. 32–225. 3 (*SVF* 2. 310, LS 45H) and Sext. Emp. *M.* 9. 11–12 (*SVF* 2. 301). For the probable origin of this dualism in the Old Academy cf. Theophrastus ap. Simplicius, *In Ar. Phys.* 26. 11–13 and Cic. *Acad.* 1. 6. 24–7. 29 discussed by Sedley 2002: 42–3 and Gourinat in Ch. 2.

⁷ See *ND* 2. 25–8. These four elements are those referred to at 2. 25 when the text says: 'All the parts of the cosmos (I will however only specify the most important) are supported and sustained by heat' (*Omnis igitur partes mundi (tangam autem maximas) calore fulta sustinentur*). Notice that in this theory both heat and flame are sustained by cosmic heat. Although flame is identified as something destructive at 2. 40–2 (I discuss this passage in detail in sect. 3), it is acknowledged in 2. 25–8 that it may eventually 'salutarem impertit et vitalem calorem' (at 27). I believe that the two passages are fully consistent with each other provided that we bear in mind that flame is destructive of its fuel and not necessarily of that which receives the heat it expels. See sect. 3.

⁸ On the Cleanethean character of these sections see Solmsen 1961; Hahm 1977: 272 n. 1; Long and Sedley 1987: ii. 279; and Besnier 1996: 154 (who offers at pp. 153–64 a detailed and very helpful analysis of the structure of the whole passage).

we ourselves die and are extinguished . . . Therefore every living thing, whether animal or vegetable, is alive on account of the heat enclosed within it. From this it must be understood that the element heat has within itself a vital power which pervades the whole **cosmos** . . . It follows from this that, since all parts of the cosmos are maintained by heat, the cosmos itself too has been preserved over so long a time by a comparable and like element—and all the more so because it must be understood that this hot and fiery entity is extended in every nature in such a way that it contains the power of reproduction and the cause of generation, since it is that by which all living things, including those whose roots are sustained by earth, must be brought to birth and grow.⁹

The heat in question ultimately proceeds from the sun. And what the argument seeks to prove is that this heat is what gives cohesion to the cosmos as a whole. The precise structure of the argument is so elusive that some scholars have surmised either that Cicero has omitted essential parts of it or that the transmitted text is lacunose.¹⁰ One possible reconstruction would proceed as follows. (1) For any living thing, its cohesive cause lies in the inner heat that pervades it, and (2) heat pervades all parts of the cosmos and especially those that are constitutive of all the others. Now (3) if something A pervades each of the several parts of something B, A pervades the whole of B. Therefore, given (1) and (2), it follows that (4) heat is the cohesive cause of each of the several parts of the cosmos, and, given (3), (5) heat is the cohesive cause of the cosmos as a whole.¹¹

Let us focus on (1) and (2). As I mentioned in the previous section, Stoic causal theory stipulates that the cohesive cause of something is what keeps it in existence. As soon as the activity of the cause stops, the existence itself of the entity stops. In other words, C is the cohesive cause of something S only if the activity of C and the endurance of S are temporally coextensive with each other. Therefore, the truth of (1) requires as a necessary condition that the endurance of a living thing be temporally coextensive with the presence of heat within it. This coextension is argued for in our passage through the observation that living things invariably die when their inner heat is extinguished and is no longer present in them.

⁹ *Sic enim res se habet, ut omnia quae alantur et quae crescant contineant in se vim caloris, sine qua neque ali possent nec crescere. Nam omne quod est calidum et igneum cietur et agitur motu suo; quod autem altitur et crescit motu quodam utitur certo et aequabili; qui quam diu remanet in nobis tam diu sensus et vita remanet, refrigerato autem et extincto calore occidimus ipsi et extinguimur. . . . Omne igitur quod vivit, sive animal sive terra editum, id vivit propter inclusum in eo calorem. Ex quo intelligi debet eam caloris naturam vim habere in se vitalem per omnem mundum pertinentem. . . . Ex quo concluditur, cum omnes mundi partes sustineantur calore, mundum etiam ipsum simili parique natura in tanta diurnitate servari, eoque magis quod intelligi debet calidum illud atque igneum ita in omni fusum esse natura, ut in eo insit procreandi vis et causa gignendi, a quo et animantia omnia et ea, quorum stirpes terra continentur et nasci sit necesse et augescere.*

¹⁰ For discussion, see Hahn 1977: 267–73.

¹¹ The thesis attested elsewhere for Cleanthes that the sun is the cosmos's ruling principle, or *ἡγεμονικόν* (Eusebius, *Praep. Ev.* 15. 15. 7 (*SVF* 1. 499, *DG* 465, 5–6) and *DL* 7. 139 (*SVF* 1. 499, *DG* 332. 23–5)) seems to be a logical consequence of combining (5) with the idea also that the sun's fire is the ultimate source of heat in the cosmos and that something's *ἡγεμονικόν* is its cohesive cause. These two ideas are present in Cleanthes. See notably *ND* 2. 29–30. For illuminating discussion of this question see Besnier 1996: 156 n. 1.

Most of the text in sections 2. 25–30 is devoted to establishing (2). As a matter of fact, the proof focuses explicitly on the most important constituents (or ‘largest’: *maxima*) in the cosmos. These are earth, water, air, and fire (both in the form of the individual portions of heat that we find in living things, and in the form of flame insofar as it is a source of heat). If they are *maxima* in the sense that they are what everything else in the cosmos is made out of, it becomes apparent why they are singled out for attention. If every non-elemental entity is made out of them, then, all non-living things, and not just the four elements and the living things, must be pervaded by heat. Let me quote the passage that deals with the case of water (section 26, in Rackham’s translation slightly modified):

Atque aquae etiam admixtum esse calorem primum ipse liquor aquae declarat [effusio], quae neque conglaciaret frigoribus neque nive pruinaque concresceret, nisi eadem se admixto calore liquefacta et dilapsa diffunderet; itaque et aquilonibus reliquisque frigoribus adiectis durescit umor, et idem vicissim mollitur tepefactus et tabescit calore. Atque etiam maria agitata ventis ita tepescunt ut intellegi facile possit in tantis illis umoribus esse inclusum calorem; nec enim ille externus et adventicius habendus eat tempor, sed ex intumis maris partibus agitatione excitatus, quod nostris quoque corporibus contingit cum motu atque exercitatione recalescant.

Likewise, that water contains an admixture of heat is shown first of all by its liquid nature; water would neither be frozen into ice by cold nor congealed into snow and hoar-frost unless it could also become fluid when liquefied and thawed by the admixture of heat; this is why the moisture both hardens when exposed to a north wind or a frost from some other quarter, and it also softens itself when warmed, and evaporates with heat. Also the sea when violently stirred by the wind becomes warm, so that it can readily be realized that this great body of fluid contains heat; for we must not suppose the warmth in question to be derived from some external source, but stirred up from the lowest depths of the sea by a violent motion, just as happens with our bodies when they are restored to warmth by movement and exercise.

The argument may be interpreted in the following way. One possible reason for thinking against Cleanthes that water does not contain heat is that water may become ice and frost. These are the coldest things in the cosmos and as such the thing from which they originate—water—could hardly contain heat. The argument, however, offers sufficient grounds for countering the objection. According to Cleanthes a mass of water freezes only when it is distributed evenly over a certain surface. But this even distribution requires that it be in a fluid or liquid state, and this in turn requires that it be acted upon by heat for only heat can keep it liquid. Now the heat in question, Cleanthes believes, is not extrinsic to the water. Two complementary reasons are given for this.

- (i) Although a rise in the temperature of a mass of water may require the warmth of an external factor such as a certain type wind, the function of the external factor is merely to stir up the heat that the mass of water already contains and that is intrinsic to it.