

RIGHT AND LEFT IN THE SEXUAL THEORIES OF PARMENIDES

G. E. R. LLOYD¹ has argued that Parmenides 'probably held that the sex of the child is determined by its place on the *right* or *left* of the mother's womb (right for males, left for females)'. It is the purpose of this paper to challenge this assertion by re-examining the primary evidence of fragments 17 and 18 of Parmenides as well as the tangled mass of testimony of the doxographers, Censorinus, Aëtius and Lactantius. In so doing I shall consciously observe a sharp distinction between theories of sex differentiation and theories of heredity since I shall argue that the confusion of the two subjects has led to distortion of Parmenides' doctrines.

I

CENSORINUS²

5.2 *igitur semen unde exeat inter sapientiae professores non constat. P. enim tum ex dextris tum ex laevis partibus oriri putavit.*

5.3 *utrumne ex patris tantummodo semine partus nascatur . . . an etiam ex matris quod Anaxagorae et Alcmaeoni necnon Parmenidi Empedoclique et Epicuro visum est.*

6.5 *at inter se certare feminas et mares et penes utrum victoria sit eius habitum referri auctor est P.*

6.8 *Anaxagoras autem parentis faciem referre liberos iudicavit qui seminis amplius contulisset. Ceterum Parmenidis sententia est cum dexterarum partes semina dederint tunc filios esse patri consimiles, cum laevae tunc matri.*

5.2 states that Parmenides thought that the semen arises from the right/left parts. It is not clear whether this means the right/left parts of the male and/or female parent or even the mother's womb; but it seems reasonable to exclude the latter suggestion on the grounds that the semen to form an embryo *in* the womb can hardly be said to come *out* of the womb. Moreover the usage of *exeat* and *oriri* does not indicate that Parmenides thought the female semen (always assuming he envisaged a female semen) comes from the right/left parts of the female body into the womb. In this case the female semen would manifestly not 'come out of' the female body. By a process of deduction therefore 5.2 must mean that the semen comes out and originates from the right/left parts of the male parent.³

5.3 states that, among others, Parmenides believed that the *partus* was born both from the semen of the father and from the semen of the mother. In itself this sentence therefore reveals a sexual theory based on two separate semina, one from the father and one from the mother.

6.5 states that Parmenides thought that the male and female vie with each other and that the overall characteristics (*habitus*) of the F¹ (first generation) offspring depend on whether the male or female 'wins'. In addition Parmenides is said to have been the first to

¹ G. E. R. Lloyd, *Polarity and Analogy* (Cambridge, 1966) 17 and 50. It is interesting to note the change in wording from Lloyd's article in *JHS* lxxxii (1962) 60 where he uses the word 'apparently' instead of 'probably'. Other discussions on the problem of Parmenides' sexual theories within the last ten years include that of W. K. C. Guthrie, *History of Greek Philosophy*, vol. ii (Cambridge, 1965) 78 ff. and L. Tarán, *Parmenides* (Princeton, 1965) 263–6. Tarán indeed asserts (264, note 98) 'sex, according to Parmenides, was determined by the female and not by the male'. Earlier work of importance in this field has been done by E. Lesky, *Die Zeugungs-*

Vererbungslehren der Antike und ihr Nachwirken, Akademie der Wissenschaften und der Literatur, Mainz, Abhandlungen der Geistes- und Sozialwissenschaftlichen Klasse, Jahrgang 1950, Nr. 19, 1272 ff.

² References to Censorinus, Aëtius, Lactantius, Caelius Aurelianus and Galen are based on the texts of H. Diels and W. Kranz, *Die Fragmente der Vorsokratiker* (Berlin, 1964) and H. Diels, *Doxographi Graeci* (Berlin, 1879). I have abbreviated the former to DK and the latter to *Dox.*

³ Guthrie, *op. cit.*, 467, note 1, gives a summary of Lesky's views on this subject and the origin of the semen in general in Presocratic philosophy.

hold this view. Again it is not clear what is meant by the phrase ‘the male (*mares*) and the females (*feminas*)’ in this context. Does it refer simply to the husband and wife? Does it entail the semen of the male and the semen of the female parent? Does it mean the male semen and the female womb? Moreover the ‘struggle’ between *feminas et mares* is also open to doubt. Does it mean a struggle for dominance between husband and wife in the marriage-relation, or a struggle of quantity of semen provided or even of quality of semen (e.g. hot or cold)? Whatever the answers, it is noteworthy that the sex of the F¹ offspring is not stated to be dependent on this struggle between male and female. The only factor involved is the heredity characteristics (*habitus*) of the F¹ offspring.

6.8 appears to answer some of the questions about the nature of the struggle between male and female if the latter indeed represent male and female semina or male semen and female womb. The passage argues that for Parmenides heredity characteristics (which result from the male and female struggle in 6.5) do *not* depend on whichever parent has provided more semen—as Anaxagoras thinks. The struggle is therefore quite definitely stated here as not one of quantity; rather it is said that Parmenides thought that when the right parts provide the semen, sons are born very like their father, and when the left parts provide the semen, sons are born very like their mother. It should be stressed that this last phrase is the only possible interpretation of the Latin. Censorinus says nothing about how daughters are produced and the passage involves only Parmenides’ views on heredity in sons.

If we now analyse these four passages of Censorinus, it is evident that in 6.8 and 6.5 only heredity characteristics are under discussion, and that in 5.2 only the origin of the semen as far as it affects the resemblance of male F¹ offspring is noted. Moreover 5.3 depicts nothing more than a theory of two separate semina—one from the male and one from the female parent. Censorinus therefore cannot be used as a source for determining the sex differentiating theories of Parmenides, but only for his views on heredity; these latter views indicate that heredity is based on the origin of the male semen for male F¹ offspring and on some unspecified cause for the female F¹ offspring. As we continue to examine the other sources it will become clear that Censorinus is the only doxographer to attribute heredity solely to the origin of the semen, the others making destination of the semen, as well as origin of it, crucial.⁴

AËTIUS (PS. PLUTARCH *EPIT.*)

v 7.2 under the heading: *πῶς ἄρρενα γεννᾶται καὶ θήλεα. Π. ἀντιστρόφως· τὰ μὲν πρὸς ταῖς ἄρκτοις ἄρρενα βλαστῆσαι (τοῦ γὰρ πυκνοῦ μετέχειν πλείονος), τὰ δὲ πρὸς ταῖς μεσημβρίαις θήλεα παρὰ τὴν ἀραιότητα.*

v 7.4 *Ἀναξαγόρας, Π. τὰ μὲν ἐκ τῶν δεξιῶν (sc. σπερμάτων) καταβάλλεσθαι εἰς τὰ δεξιὰ μέρη τῆς μήτρας, τὰ δ’ ἐκ τῶν ἀριστερῶν εἰς τὰ ἀριστερά· εἰ δ’ ἐναλλαγείη τὰ τῆς καταβολῆς, γίνεσθαι θήλεα.*⁵

v 11.2 under the heading: *πόθεν γίνονται τῶν γονέων αἱ ὁμοιώσεις καὶ τῶν προγόνων. Π. ὅταν μὲν ἀπὸ τοῦ δεξιοῦ μέρους τῆς μήτρας ὁ γόνος ἀποκριθῆ τοῖς πατράσιν, ὅταν δὲ ἀπὸ τοῦ ἀριστεροῦ ταῖς μητράσιν.*

v 7.4 states that both Anaxagoras and Parmenides believed that the semen from the

⁴ The views of Censorinus can be expressed as follows, with y as male (father and offspring), x as female, z as F¹ offspring and r, l as right and left parts of the father.

$$y^r (+x) = zy^x$$

$$y^l (+x) = zy^y$$

⁵ Tarán, *op. cit.*, 264, note 98, claims that the text is wrong to have *θήλεα* after *γίνεσθαι* since this ‘contra-

dicts our other sources’. He does not however follow Diels, *Dox.*, 194, and read . . . *γίνεσθαι τὰ μὲν θήλεα ἄρρενικώτερα, τὰ δὲ ἄρρενα θηλυτέρα*, but changes the order because certain other sources (e.g. Galen and Censorinus) ‘show that the sex, according to Parmenides, was determined by the female and not the male’. I prefer to reject Tarán’s logic here (as will become clear) and retain the original reading.

right parts falls on to the right parts of the female parent, while the semen from the left parts falls on to the left regions of the mother's womb. If this process is reversed female children result (i.e. if right falls on left and left on right). Now it is probable that the semen which enters the mother's womb is the male semen and that this male semen comes from the left or right parts. The differentiation of sex occurs not when the semen comes from the right/left parts of the male but when it enters into the womb. Male F¹ offspring result when semen from the right part of the male enters the right part of the womb and male F¹ offspring result also when the semen from the left part of the father enters the left part of the womb. It is only when semen from the right part of the father enters the left part of the womb and semen from the left part of the father enters the right part of the womb that female F¹ offspring result.

v 11.2 deals with heredity and states that the γόνος⁶ from the right part of the mother is like its father and from the left part like its mother. Nothing more can be deduced from this passage.

v 7.2 is on rather different lines in that Parmenides' theory is said to be completely different from that of Empedocles—whose differentiation of sex is based on heat and cold, so that males originally arose in the south/east regions of the world and females in the north. Parmenides is said to think that males are (literally) denser than females and so originate in the north while females are of a rarefied texture and so originate in the south. This passage therefore introduces a new conception into sex differentiation, i.e. heat or cold based on density or rarity. It is noteworthy that the paragraph heading for both this passage and v 7.4 is πῶς ἄρρενα γεννᾶται καὶ θήλεα. In the very place therefore where we might reasonably expect the right/left doctrine of Parmenides to be outlined, we find a theory of heat and cold, rare and dense. Moreover, far from being given credit for originating the right/left doctrine,⁷ Parmenides has his name coupled with that of Anaxagoras, in section 4 (v 7.4) of the paragraph, in such a way as to suggest an interpolation or an afterthought.

These three passages from Aëtius therefore provide us with the following information:

1. Male F¹ offspring result when the semen from the right/left parts of the father enters the right/left parts of the womb respectively; if this does not occur in this sequence, female F¹ offspring result.
2. Heredity involves the part of the female womb in which the offspring is located (in contrast to Censorinus' remarks). A male F¹ offspring in the left of the womb will be like his mother and in the right like his father. Presumably a female F¹ offspring will be like her mother in the left part of the womb and like her father in the right.⁸
3. The physical basis of the male is denser than that of the rarefied female.⁹ This led originally to males being born in the north and females in the south.

The apparent paradox in Aëtius' account is at once evident: he attributes a right/left theory of sex differentiation to Parmenides two sections after he has stated that he believes in heat, cold, density and rarity as vital factors in originally distinguishing the sexes. Why

⁶ γόνος might mean 'child' or 'seed' here, which makes deductions about sex differentiation hypothetical.

⁷ Aëtius of course may very well not be interested in giving credit for originality, but one can see no reason why Parmenides' name should occur after that of Anaxagoras, unless Aëtius was following the passage in Aristotle, *GA* 763b30 and the phrase 'Anaxagoras and others of the physicists'; for a discussion of this point see below.

⁸ These first two points of Aëtius may be expressed as follows, using the same notation as for Censorinus but with r, l also meaning right/left of the womb:

(a) *Sex differentiation*

$$y^l \longrightarrow x^l = zy$$

$$y^r \longrightarrow x^r = zy$$

$$y^l \longrightarrow x^r = zx$$

$$y^r \longrightarrow x^l = zx$$

(b) *Heredity*

$$y \longrightarrow x^r = zy^r$$

$$y \longrightarrow x^l = zy^l$$

⁹ See Guthrie, *op. cit.*, 78/9 for an interesting discussion on density and rarity for Parmenides.

in short did not the right/left theory operate among the first human beings? Does heat, etc., play a part in sex differentiation today, and if so how does it accord with the right/left theory? Possible solutions to this paradox are:

1. The inclusion of Parmenides' name after Anaxagoras in v 7.4 is an error either by Aëtius or a later scribe. This would mean that, according to Aëtius, Parmenides did not believe in a right/left sex differentiation theory. Objections to this solution are: (a) fragment 17 of Parmenides and (b) the testimony of Aristotle (see below for discussion).

2. Parmenides believed that male and female were originally distinguished by heat and cold in the north and south, as well as by density and rarity, but are now distinguished on a right/left basis. Just as v 7.1 (with its phrase *τοὺς μὲν πρώτους ἄρρενας*) is correlated with v 7.2, therefore, v 7.2 should itself be correlated with v 7.4. The main objection to this attractive solution is that the Greek text of v 7.2 and v 7.4 makes no mention of such a distinction in temporal terms. Moreover v 7.4 is not set immediately after v 7.2 but follows a short sentence on Hipponax [*sic*] or Hippo—which does not support the notion that v 7.4 should be taken in temporal contrast to v 7.2.

3. Parmenides believed that male and female were originally distinguished by heat and cold but are now distinguished by rarity and density. This solution disregards the right/left theory of v 7.4 as being either an error or an interpolation and also has the disadvantage that the actual language of v 7.2 does not directly state such a contrast.

4. Parmenides did not in fact hold the heat/cold theory of sex differentiation but only used the right/left theory. This solution is the most radical of the four proposed and the least satisfactory with regard to Aëtius' text. It is possible that Parmenides' name may have been substituted for some other (e.g. Anaxagoras) in v 7.2 and that in fact Parmenides should be the principal subject of v 7.4. One might argue also that it is odd that Parmenides should be contrasted with Empedocles as if Parmenides had used the heat/cold theory *after* (chronologically) Empedocles. Why does Aëtius not put v 7.2 before v 7.1 and give Parmenides the credit for discovering this theory of sex differentiation? Possibly the answer is that Aëtius is quite uninterested in giving credit for originality, but there is still the chronological reversal to explain.

Before further discussion of the merits and disadvantages of these possible solutions to the paradox in Aëtius' account we must proceed with the rest of the evidence.

LACTANTIUS

De opif. 12.12. *Dispaes quoque naturae hoc modo fieri putantur: cum forte in laevam uteri partem masculinae stirpis semen inciderit, marem quidem gigni opinatio est, sed quia sit in feminina parte conceptus, aliquid in se habere femineum supra quam decus virile patiat, vel formam insignem vel nimium candorem vel corporis levitatem vel artus delicatos vel staturam brevem vel vocem gracilem vel animum imbecillum vel ex his plura. item si partem in dexteram semen feminini generis influxerit, feminam quidem procreari, sed quoniam in masculina parte concepta sit, habere in se aliquid virilitatis ultra quam sexus ratio permittat, aut valida membra aut immoderatam longitudinem aut fuscum colorem aut hispidam faciem aut vultum indecorum aut vocem robustam aut animum audacem aut ex his plura; si vero masculinum in dexteram, femininum in sinistram pervenerit, utrosque fetus recte pervenire.*

This passage states that when by chance *semen masculinae stirpis* falls on the left part of the mother's womb, a male F¹ offspring results. But because it is conceived in the female part it has something of a woman in it 'above that which male honour allows'. The list of these effeminate attributes of such an offspring is not merely confined to physical properties but to mental ones as well (e.g. *animum imbecillum*). Moreover if *semen feminini generis* flows into the right part of the womb, then a female F¹ offspring is produced. Since, however, this female child has been conceived in the masculine part, it has, again, something in it other

than the plan of its sex permits. The male attributes are again listed on similar lines to the effeminate ones. The last sentence gives what should happen when both the *masculinum semen* and the *femininum semen* arrive correctly—the *masculinum* coming into the right part and the *femininum semen* into the left part of the womb.¹⁰

The first problem associated with this passage is the question of whether Lactantius is referring to Parmenides here. In his *Doxographi Graeci*, H. Diels had no doubt that he is, and W. Kranz has retained the passage under Parmenides in the latest edition of *Die Fragmente der Vorsokratiker*.¹¹ Tarán however¹² rejects this passage 'because the sources . . . show that the sex, according to Parmenides, was determined by the female and not by the male'. Since no positive claim is made by Lactantius that he is relating the theories of Parmenides, the passage cannot unquestionably be accepted as Parmenidean and further examination of the views stated in it must be made.

The second problem is the meaning of the phrases *semen masculinae stirpis* and *semen feminini generis*: does for instance the latter entail semen produced by the female or feminine seed produced by the male? The second explanation is more likely at first sight but semen produced by the female is a possibility, and would seem to allow for parthenogenesis (*cf.* Aristotle *GA* 763b). Even if Lactantius however in fact means that there are two separate semina, and if he is referring to Parmenides here, the passage does not help us discover anything about sex differentiation. It involves heredity in the analysis of the origin of effeminate men and viragos and says nothing about sex differentiation in the last sentence, but merely indicates the correct destination of semen *which is already masculine or feminine*. Since this passage therefore is commonly linked with fragment 18 of Parmenides we must now examine the latter to discover if this can provide any information on sex differentiation.

PARMENIDES, FRAGMENT 18

Caelius Aurelianus, *de morb. chron.* (DK 28B18) *Parmenides libris quos de natura scripsit, eventu inquit conceptionis molles aliquando seu subactos homines generari. cuius quia graecum est epigramma, et hoc versibus intimabo. latinos enim ut potui simili modo composui, ne linguarum ratio misceretur:*

*'Femina virque simul Veneris cum germina miscent,
venis informans diverso ex sanguine virtus
temperiem servans bene condita corpora fingit.
nam si virtutes permixto semine pugnent
nec faciant unam permixto in corpore, dirae
nascentem gemino vexabunt semine sexum.'*

vult enim seminum praeter materias esse virtutes, quae si se ita miscuerint, ut eiusdem corporis faciant unam, congruam sexui generent voluntatem: si autem permixto semine corporeo virtutes separatae permanserint, utriusque veneris natos adpetentia sequatur.

Apart from any problems of interpretation the actual fragment conceals a number of pitfalls for the translator, and before discussing the passage I append a literal version: 'As soon as the husband and wife mix their secretions of Love, the power which is forming

¹⁰ On the scheme as already used, Lactantius' views are as follows (noting that y and x may apply either to the single semen with masculine and feminine characteristics or to two semina, one for the father and one for the mother):

(a) *Heredity*

$$y (+ x) \longrightarrow x^l = zy^x$$

$$(y) + x \longrightarrow x^r = zx^y$$

(b) *Sex differentiation*

$$y (+ x) \longrightarrow x^r = zy$$

$$(y) + x \longrightarrow x^l = zx$$

¹¹ DK 28A54; Diels, *Dox.*, 194.

¹² Tarán, *op. cit.*, 264, note 97 and 265, note 99, gives a fair summary of the various views on the fragment.

(bodies) in the veins out of the different blood, if it observes due restraint, fashions well-formed bodies. For if the powers, when the semen has been thoroughly mixed, (continue to) fight and do not make one, single, power in a thoroughly mixed body, dreadfully will they torment the sex as it grows with double semen.' *Informans* is clearly a transitive verb and requires either *corpora* or even perhaps *germina Veneris* as its object.¹³ The subjunctives *pugnent* and *faciant* are most probably translations of the Greek optative by Caelius Aurelianus and need not detain us. The correct reading in l.5 however may well be *permixtae in corpore*, especially in view of Caelius' interpretation *si se ita miscuerint ut eiusdem corporis faciant unam (sc. virtutem)*.

What therefore does the actual fragment tell us? Clearly the two *germina Veneris* make a single body and are therefore thoroughly mixed. If their *virtutes* however do not coalesce but continue to struggle with each other, then an effeminate man or a virago results. What is not clear is exactly what will be tormented if the *virtutes* struggle on: is it the embryo, or a later stage, or even the adolescent? However this is answered, one basic deduction can be made from the fragment, namely that the question of sex differentiation is not involved here: there is no indication of whether or indeed if the mixing of the *germina Veneris* produces male and female F¹ offspring. Although Tarán therefore gives a fair summary of modern views on the fragment by Diels, Lesky and Untersteiner, he himself puts forward theories of right/left *sex differentiation* and subsequent heredity which are purely hypothetical when based on this fragment.¹⁴

As for Caelius' comments, these revolve around the initial statement that Parmenides said that, depending on the outcome of the conception, men are sometimes produced who are effeminate and weak (I take *seu* to mean 'and' in this context). Parmenides argues, says Caelius, that the failure of the *virtutes* to mix properly together to form a single *virtus*, results in an effeminate man or a virago. Moreover the *virtutes* are immaterial, the body of the offspring already having been formed when 'the bodily semen has been thoroughly mixed'. Does this mean that the *virtutes* or at least their combination into a single *virtus* normally give the F¹ offspring its sex or does the thorough mixture of *corporeum semen* differentiate sex? The implication of the continued struggle between the *virtutes* resulting in men/women and women/men is that sex is differentiated when the *virtutes* coalesce or, if they do not mix, not differentiated at all. How much of this commentary and indeed the translation of the fragment was affected by Aristotle's basic theory that the father provided the 'form' and the mother the 'material' for the F¹ offspring is debateable, but one might comment that the immaterial aspect of the *virtutes* and the advanced form of chemical mixture which the mixture of the *virtutes* implies would, if true, indicate that Parmenides was far ahead of his time. Certainly the fragment and Caelius' comments deserve attention but their authenticity must be suspect.

PARMENIDES, FRAGMENT 17

Galen, in *Epid.* vi 48 τὸ μέντοι ἄρρην ἐν τῷ δεξιῷ μέρει τῆς μήτρας κύσκεσθαι καὶ ἄλλοι τῶν παλαιοτάτων ἀνδρῶν εἰρήκασιν. ὁ μὲν γὰρ Π. οὕτως ἔφη·

δεξιτεροῖσιν μὲν κόρους, λαιοῖσι δὲ κόρας. . . .

If we ignore Galen's introductory comments for the moment, the actual fragment might mean that boys come from the right parts of the male parent and girls from the left, or it might entail that boys come from the right of the female womb and girls from the left, or it

¹³ Tarán, *op. cit.*, 172, translates 'the power which is formed in the veins . . .', i.e. makes *informans* intransitive. This is incomprehensible.

¹⁴ Tarán, *op. cit.*, 263-5.

might even mean that position is determined by sex, i.e. that the F¹ offspring which is *already* male/female is conceived in the right/left part of the mother's womb. What is not stated is how Parmenides envisaged the process of sex differentiation. The only deduction which can be safely made from the actual fragment is that Parmenides thought right and left were somehow connected with sex, and even here we must rely on Galen's judgment that the passage did in fact refer to sex in the first place. If we assume that Galen met the line in an anthology or something similar of theories of sex the last assumption is reasonable, but beyond this, deduction from the fragment by itself is pure speculation. Certainly no reference to the parts of the father or the mother's womb can be positively supported by the line, nor can any theory of separate semina for male and female be seen in it.

Moreover the words which Galen uses to introduce the fragment are themselves capable of more than one meaning. For example when he says that 'the male is conceived in the right part of the mother' he might well mean that a F¹ male offspring is actually conceived in the right of the womb, i.e. that the sex of the offspring depends on position in the womb, or alternatively, he could be arguing that an offspring which is already male is conceived in the right of the womb, i.e. that position in the womb is determined by sex. The ambiguous nature of these introductory comments must be doubly stressed since they are the only references in the whole of the testimonies and fragments to a sex theory of Parmenides where males are said to be conceived on the right of the womb; when Lloyd, Tarán, and almost all commentators without exception use these introductory comments and the fragment to illustrate Parmenides' theory of sex differentiation it must be stated that they are using material of disputed value. Finally it is strange that none of the doxographers mentions this fragment 17 or uses its language, and it is even more puzzling that Aristotle, in the course of a review of early theories of sexual generation, makes no reference to it. Indeed Aristotle, far from attributing to Parmenides the credit for discovering the right/left doctrine of sex differentiation, does not mention the theory when discussing him. To discover if this is deliberate omission or if in fact Aristotle did not know of such a theory for Parmenides we must analyse two passages in the Aristotelian Corpus which might assist us.

ARISTOTLE, DE PARTIBUS ANIMALIUM, 648a25 ἔνιοι γὰρ τὰ ἔνυδρα τῶν πεζῶν θερμότερά φασι εἶναι, λέγοντες ὡς ἐπανισοὶ τὴν ψυχρότητα τοῦ τόπου ἢ τῆς φύσεως αὐτῶν θερμότης, καὶ τὰ ἀναίμα τῶν ἐναίμων καὶ τὰ θήλεα τῶν ἀρρένων, οἷον Π. τὰς γυναῖκας τῶν ἀνδρῶν θερμότερας εἶναι φησι καὶ ἕτεροὶ τινες, ὡς διὰ τὴν θερμότητα καὶ πολυαιμούσαις γινομένων τῶν γυναικείων, Ἐμπεδοκλῆς δὲ τοῦναντίον.

ARISTOTLE, DE GENERATIONE ANIMALIUM, 763b30 φασι γὰρ οἱ μὲν ἐν τοῖς σπέρμασιν εἶναι ταύτην τὴν ἐναντίωσιν εὐθύς, οἷον Ἀναξαγόρας καὶ ἕτεροι τῶν φυσιολόγων· γίνεσθαι τε γὰρ ἐκ τοῦ ἀρρενος τὸ σπέρμα, τὸ δὲ θήλυ παρέχειν τὸν τόπον, καὶ εἶναι τὸ μὲν ἄρρεν ἐκ τῶν δεξιῶν τὸ δὲ θήλυ ἐκ τῶν ἀριστερῶν καὶ τῆς ὑστέρας τὰ μὲν ἄρρενα ἐν τοῖς δεξιοῖς εἶναι τὰ δὲ θήλεα ἐν τοῖς ἀριστεροῖς. οἱ δ' ἐν τῇ μητρῷ, καθάπερ Ἐμπεδοκλῆς· τὰ μὲν γὰρ εἰς θερμὴν ἐλθόντα τὴν ὑστέραν ἄρρενα γίνεσθαι φησι τὰ δ' εἰς ψυχρὰν θήλεα, τῆς δὲ θερμότητος καὶ τῆς ψυχρότητος τὴν τῶν καταμηνίων αἰτίαν εἶναι ῥύσιν, ἢ ψυχροτέραν οὖσαν ἢ θερμότεραν, καὶ ἢ παλαιότεραν ἢ προσφατωτέραν.¹⁵

¹⁵ A. L. Peck, *Aristotle's Generation of Animals* (London, 1943) 373, note c, brackets the phrase *καὶ τῆς ὑστέρας . . . ἐν τοῖς ἀριστεροῖς* and comments: 'These words must be an interpolation, as they are inconsistent with the view just described'. If we analyse the paragraph in two sections schematically however we can see that there is no inconsistency, merely amplification—which might or might not be genuine:

(a) γίνεσθαι τε γὰρ . . . ἐκ τῶν ἀριστερῶν . . .

$$y^r \longrightarrow x = zy$$

$$y^l \longrightarrow x = zx$$

(b) καὶ τῆς ὑστέρας . . . ἐν τοῖς ἀριστεροῖς

$$y^r \longrightarrow x^r = zy$$

$$y^l \longrightarrow x^l = zx$$

The first passage, though often quoted in connexion with Parmenides' sexual theories, in fact only states that Parmenides thought that women were hotter than men and that this warmth of their blood was the cause of the menses. The second passage does not mention Parmenides by name but states that Anaxagoras 'and others of the physicists' supposed the semen to come from the right parts of the father (male F¹ offspring) or the left parts (female F¹ offspring) and enter into the female parent's womb which was a receptacle—male F¹ offspring being on the right and female on the left. Empedocles on the other hand, we are told, viewed sex differentiation as occurring in the womb, primarily because of the action of the male semen on a hot womb (resulting in male F¹ offspring) and a cold womb (resulting in female F¹ offspring).

The obvious question is whether or not Parmenides is to be included among 'others of the physicists'? One argument against including him is the reticence of Aristotle in the first passage when dealing with Parmenides' views on the relative heat of males and females. We might expect, it could be argued, some mention of a right/left sexual theory at this juncture, but none is forthcoming. On the other hand it might be stated that the first passage occurs in the *De Partibus Animalium* in a context which is concerned with the hot and cold and is not primarily discussing sex differentiation.

A second argument against including Parmenides among 'others of the physicists' is similarly fruitless: it might be stated that whereas Aristotle in the actual chapter which he devotes to a review of previous theories of sex differentiation mentions Anaxagoras, Empedocles, Democritus and the mysterious Cleophanes or Leophanes by name, he does not refer to Parmenides who has some claim, as we have seen, to have been the author of the right/left theory. Aristotle however is notoriously inadequate as a historian of Presocratic philosophy and this argument can be countered by the supposition that he saw fit, for whatever reasons, to omit Parmenides' name from his review.

When we turn for arguments for including Parmenides among 'others of the physicists' we encounter problems as well; for example the second passage can only be interpreted as saying that Anaxagoras and 'others of the physicists' thought that the main factor in sex differentiation was the origin of the semen (from the right/left parts of the father), *not* the position in the female womb. If Parmenides is to be given this theory then not only must fragment 17 (to be authentic) mean that offspring (which are already male and female) are merely conceived in the right/left of the womb, but also fragment 18 must be rejected. The reason for this is that the latter mentions two separate semina, which demonstrably cannot function under the above formula, since in Aristotle's words, 'the female provides a place' and *only* a place for the male semen.

II

A logical analysis of all these sources therefore reveals fundamental contradictions: on one side we have the right/left theory of sex differentiation with difficulties of its own concerning the number of semina and the actual place of sex differentiation, while on the other hand we have Aëtius' testimony of v 7.4 supported to a certain extent by Aristotle, *PA* 648a25, noting a theory based on heat, cold, rare and dense. Are these two stand-points irreconcilable? It is certainly possible that hot/cold and right/left were not as rigidly distinct for Parmenides as we might imagine, and it is possible too that Aristotle refers to this in his vague comment at *GA* 765a34. In view of W. K. C. Guthrie's¹⁶ inconclusive discussion on this very point however, there seems no reasonable justification for believing that right/left and hot/cold were synonymous for Parmenides. If this is so, what is the solution?

One possible answer is that Parmenides is not to be included under Aristotle's phrase

¹⁶ Guthrie, *op. cit.*, 77/79.

'others of the physicists' but that Aristotle's other passage, at *PA* 648a25, on the heat and coldness of males and females should be followed together with Aëtius v 7.2. This would attribute to Parmenides a theory of sex differentiation based on heat, cold, rare and dense. It may well be that Parmenides thought sex was determined in the womb by the heat of the womb, males occurring in a cold womb and females when the womb was hot because of the menses. This would have been rejected by Empedocles whom Aristotle says thought sex to be determined in the womb and to be based on whether the womb was hot or cold (the menses causing the heat, but males resulting when it was hot and females when cold). The origin of the confusion over the right/left doctrine would then have been caused by the other passage in Aristotle as various commentators took the phrase 'Anaxagoras and others of the physicists' to refer to Parmenides. Since this passage also mentions that sex was not differentiated in the womb but in the right/left parts of the father further confusion might have occurred over the place of sex differentiation. Unfortunately this solution still leaves fragment 17 and Galen's introductory comments. The doubtful nature of the comments and the uncertainty over the exact origin and reference of the actual fragment might outweigh any force these have. Fragment 18, and indeed Caelius' comments, is suspicious both in language and content; if genuine however it would certainly contradict the above solution as regards heredity and possibly sex differentiation. Lactantius' views quite possibly do not refer to Parmenides but if they do, are too ambiguous to contradict the above solution.

A second solution is to reject Aëtius v 7.2 and include Parmenides in Aristotle's phrase 'others of the physicists'. This would credit him with a right/left doctrine of sex differentiation and ignore *PA* 648a25 as inapplicable to it. In addition it would entail that for Parmenides the origin of the semen is the vital factor in this process and that only the father provided semen. Fragment 18, with its two semina, and Censorinus 5.3 with semen from both the father and the mother, would thus be inappropriate. Lactantius might or might not accord with this solution depending on how one considered the phrase *semen feminini generis* and whether one thought the whole passage referred to Parmenides in the first place. Fragment 17 and Galen's remarks again are ambiguous—one sense giving male offspring already formed before conception in the womb and another depicting that males were actually sexually differentiated in the womb; the latter would be inappropriate, but the former view might accord with the above solution.

A third solution is the view that fragment 18 is genuine; this would mean that Parmenides is not to be included in Aristotle's phrase 'Anaxagoras and others of the physicists'. A right/left theory *and/or* a theory based on heat, cold, rare and dense could be added to the process whereby the two *virtutes* coalesce into one *virtus*, sexually differentiating the already existing body of the embryo. Any passage (such as possibly Aëtius v 7.4) which gave a theory based on only one semen would have to be rejected but fragment 17 of Galen could be construed in *either* of the two senses we have discussed and Censorinus 5.3 would also accord with this solution. Disadvantages however to this answer include the problem of the right/left and hot/cold conflict still, but this might be answered by the confusion caused by Aristotle's phrase 'Anaxagoras and others of the physicists'; in fact Parmenides' *virtutes* might well have coalesced into one single *virtus* to produce the sex of the already existing body of the offspring on the basis of the temperature of the *virtutes* (hot/cold) or their quality (rare/dense). The right/left theory would then have been the result of later commentators deducing that Aristotle meant Parmenides to be included in the phrase 'Anaxagoras and others of the physicists'. Unfortunately this provides a further difficulty, namely fragment 17, which on this basis would either have to be spurious or not refer to sex differentiation. Moreover all the other references to Parmenides and right/left sex differentiation theories (though not necessarily heredity theories) would be invalidated. Only if right/left, hot/cold and rare/dense theories were not distinct in Parmenides' eyes would all these

references accord with the above solution, and we have seen that such a conclusion cannot be drawn with any certainty. Finally it must be re-stated that if we accept fragment 18 as genuine and work out a scheme for sex differentiation based on the *virtutes* coalescing into one *virtus*, we must also accept the problem of the immaterial nature of these *virtutes* and the nature (i.e. complete fusion) of their combination. It might be argued that Caelius Aurelianus foists this immaterial aspect on the *virtutes* of the actual fragment (although the fact that *virtus* forms/fashions *corpora* seems to suggest an immaterial nature) but the fusion problem still remains, i.e. did anyone before Aristotle conceive chemical mixture?

III

Of the three solutions put forward therefore each has certain advantages and disadvantages. On balance the third answer seems the most attractive with the first solution not far behind. At all events however it must be manifest that Lloyd's assumption that the sex of the child for Parmenides is 'probably' determined by its place in the womb is untenable: Galen's introductory comments to fragment 17 (on which Lloyd must base this view since no other source gives position in the womb as cause of sex differentiation) are unsupported by the other testimonies and are in fact ambiguous in themselves.¹⁷

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