

Right and Left in Greek Philosophy

G. E. R. Lloyd

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RIGHT AND LEFT IN GREEK PHILOSOPHY

THE purpose of this article is to consider how the symbolic associations which right and left had for the ancient Greeks influenced various theories and explanations in Greek philosophy of the fifth and fourth centuries B.C. The fact that certain manifest natural oppositions (e.g. right and left, male and female, light and darkness, up and down) often acquire powerful symbolic associations, standing for religious categories such as pure and impure, blessed and accursed, is well attested by anthropologists for many present-day societies.¹ Robert Hertz, in particular, has considered the significance of the widespread belief in the superiority of the right hand, in his essay 'La prééminence de la main droite: étude sur la polarité religieuse' [*Revue Philosophique* lxxviii (1909), 553 ff., recently translated into English by R. and C. Needham in *Death and the Right Hand* (London, 1960) 89 ff.²]. It is, of course, well known that the ancient Greeks shared some similar beliefs, associating right and left with lucky and unlucky, respectively, and light and darkness with safety, for example, and death. Yet the survival of certain such associations in Greek philosophy has not, I think, received the attention it deserves. I wish to document this aspect of the use of opposites in Greek philosophy in this paper, concentrating in the main upon the most interesting pair of opposites, right and left. Before I turn to the evidence in the philosophers themselves, two introductory notes are necessary. In the first, I shall consider briefly some of the evidence in anthropology which indicates how certain pairs of opposites are associated with, and symbolise, religious categories in many present-day societies. The second contains a general summary of the evidence for similar associations and beliefs in pre-philosophical Greek thought.

I

The superiority of the right hand might be thought to rest on purely anatomical factors. That there is a functional asymmetry of the brain—the left cerebral hemisphere being more developed, in some respects, than the right—is agreed (though whether this is the cause, or an effect, of the superior development of the right hand, is still an open question³). Yet even if we assume that there is a definite anatomical basis for the superiority of the right hand, this does not determine why many societies insist that the difference between the two hands should be not only maintained, but emphasised. The mutilation of the left arm is a practice which is reported in a number of societies. Evans-Pritchard, noting how Nuer youths put their left arm out of action for long periods by binding it with metal rings, said that the belief that underlies this and other Nuer practices is that 'the right side is the good side and the left side the evil side'.⁴ According to Hertz,⁵ the right is often thought to be the seat of sacred power, 'the source of everything that is good, favourable and legiti-

¹ I must express my gratitude to Professor Meyer Fortes and Mr Edmund Leach, Professor and Reader in Social Anthropology in the University of Cambridge, for their help on several questions of anthropology connected with this paper.

² I am grateful to Dr and Mrs Needham for permission to quote extracts from their translation of Hertz's essay.

³ Hertz remarked on the connexion between the predominance of the right hand and the superior development of the left part of the brain (*op. cit.*, 90,

see also Needham's note in his translation referring to G. B. D. Scott, *Man* lv (1955) 67 ff.), but suggested that as the exercise of an organ leads to the greater nourishment and consequent growth of that organ, we might as well say that we are left-brained because we are right-handed, as say that we are right-handed because we are left-brained.

⁴ Cf. E. E. Evans-Pritchard, *Nuer Religion* (Oxford, 1956) 234 ff., where a number of other practices illustrating this belief are given.

⁵ *Op. cit.*, 100.

mate', while the left is the profane side, 'possessing no virtue other than . . . certain disturbing and suspect powers'. It is interesting to note that the right is not invariably the sacred side. Although the great majority of societies hold the right to be the honourable side, there are some instances of peoples who are predominantly right-handed, but who nevertheless consider the left the nobler side: among the Zunis⁶ the left and right sides are personified as brother gods, of which the left is the elder and wiser, and among the ancient Chinese,⁷ the left was Yang and therefore superior, the right Yin and inferior. This reversal of the usual associations indicates, to my mind, the part played by social, rather than purely physiological, factors in determining the attitude to right and left.

Many primitive peoples identify the right-hand side with what is sacred and pure, the left with the profane and the impure, and other pairs of opposites also acquire similar associations. Hertz⁸ has already discussed the associations which male and female have for the Maori, for example. The association of day, light and east with the powers of life and strength, and of night, darkness and west with the contrary powers of death and weakness, is very common. Further, as perhaps the natural resultant of this tendency to identify certain pairs of opposites with the sacred and the profane, we find that such pairs as day/night, right/left and male/female are often themselves correlated or identified, even where there is no manifest connexion between them. A single example of this may be mentioned.⁹ Evans-Pritchard notes that for the Nuer there are two sets of opposites, the one comprising the left side, weakness, femininity and evil, and the other the right side, strength, masculinity and goodness: east is associated with life, and west with death, but then east is also identified with right and west with left 'thus bringing into the left-right polarity the polar representations not only of life and death but also of the cardinal points east and west'.¹⁰

II

The evidence in anthropology shows quite clearly that in many present-day societies certain natural oppositions (especially right and left) are often associated with, or symbolise, important spiritual categories, e.g. 'sacred' and 'profane', 'pure' and 'impure'. Some of the associations which various natural oppositions had for the ancient Greeks are, no

⁶ As Evans-Pritchard notes (in his Introduction to *Death and the Right Hand*, 22), Hertz mentions this example (108 f.) only to dismiss it as a 'secondary development'. The fact that the Zuni are a peaceful agricultural people no doubt contributes to the relative estimation in which they hold the right, or spear, hand, and the left, or shield, hand.

⁷ Cf. M. Granet, *La Pensée Chinoise* (Paris, 1934) 361 ff. The Chinese attitude to this antithesis is complex, for while the Left is generally superior and Yang, and the Right inferior and Yin, yet in the sphere of what is itself common or inferior, the Right in some sense has precedence over the Left. Thus, the right hand is used for eating (Granet, 364). The right side is the appropriate side for women (while the left belongs to men, *id.*, 368).

⁸ *Op. cit.*, 97. Among the Maori 'man is sacred, woman is profane: excluded from ceremonies, she is admitted to them only for a function characteristic of her status, when a taboo is to be lifted, i.e. to bring about an intended profanation'. Cf. also Evans-Pritchard, *Nuer Religion*, 234, on the Nuer belief that the female principle is associated with evil.

⁹ Many primitive societies appear to classify things generally into groups of opposites (often corresponding to opposite groups in the society itself). A number of notable examples of such classifications are given by J. M. Van der Kroef (*American Anthropologist* lvi (1954) 847 ff.), among them that of the people of Amboyna in Indonesia who, according to this authority, correlate pairs of opposites in the following way:

Left	Right
Female	Male
Coast or sea-side	Land or mountain-side
Below	Above
Earth	Heaven or sky
Spiritual	Worldly
Downwards	Upwards
Exterior	Interior
Behind	In Front
West	East
New	Old.

¹⁰ Evans-Pritchard, *Nuer Religion*, 235

doubt, well known and need little comment. One antithesis of great importance is that between *sky* and *earth*, for with these are associated two fundamental religious distinctions, (1) the distinction between Olympian and chthonian deities,¹¹ and (2) the general distinction between gods and men, between the *ἐπουράνιοι* and the *ἐπιχθόνιοι*.¹² Another important pair of opposites is *light* and *darkness*. As R. Bultmann has shown with a wealth of documentation (*Philologus* xcvi (1948) 1 ff.), light, for the ancient Greeks, was the symbol of well-being, happiness, success and glory in life, and of life itself (while darkness and night were generally associated with the contraries of these). Among other pairs of opposites connected with sky and earth, or with light and darkness, *up* and *down* and *white* and *black* certainly have important symbolic values from an early stage.¹³ Although there appear to be no good grounds for believing that in early Greek religious practices *male* and *female* stood in an unvarying relationship of 'sacred' and 'profane' to one another (as Hertz suggested is the implication of Maori cults), it may be noted that women are usually thought of as inferior; and Hesiod, at least, repeatedly describes the first woman, Pandora, as an evil (e.g. *Th.* 570, 585, 600; *Op.* 57, 89), and even implies that she is the source of all evil for mankind.¹⁴

The associations which *right* and *left* themselves have in Homer and Hesiod may be considered in a little more detail. The fact that the right is the lucky, the left the unlucky, side for the Greeks, is well known: omens on the right are auspicious, those on the left inauspicious, in Homer, for example (e.g. *Il.* xxiv 315–21, *Od.* ii 146–54). But then the lucky direction, from left to right, was observed in many different activities, such as in the serving of wine round a group of guests (*Il.* i 597; cf. Plato, *Symp.* 223c, etc., and *Od.* xxi 141 ff., where the suitors try Odysseus' bow going from left to right of their company), and in the drawing of lots (at *Il.* vii 181 ff., the lot which has been cast is taken round the group of warriors from left to right until it is claimed by its owner). The right hand is used to greet people (e.g. *Od.* i 120 f.; cf. *δεξιόμοι*, e.g. *H. Hom.* vi 16), to pour a libation (e.g. *Il.* xxiv 283 ff.) and to give a solemn pledge (in Homer *δεξιά* is used with *σπονδαί* of a truce, e.g. *Il.* iv 159). Conversely, the left hand is unlucky. Two of the words for it are euphemisms *εὐώνυμος* and *ἀριστερός*, and a third *σκαῖός* comes to mean 'ill-omened' (as in Soph., *Aj.* 1225 'ἄγλος δέ μουσὶ σκαῖον ἐκλύσων στόμα') and 'awkward' (e.g. Ar., *Vesp.* 1265 f.), like the French 'gauche', the opposite of *δεξιός* meaning 'clever' or 'skilful'.

Many natural oppositions had strong symbolic associations for the ancient Greeks.

¹¹ These two categories of gods are often referred to in invocations, e.g. Aesch., *Ag.* 89, *Supp.* 24 f.; Eur., *Hec.* 146 f.; Plato, *Laws* 717ab. The importance of the distinction between them has been particularly stressed by Professor Guthrie, *The Greeks and their Gods* (London, 1950), ch. viii and ix; cf. p. 209 'The distinction between Olympian and chthonian, aetherial and sub-aetherial, or to put it more simply, between gods of the heaven and gods of the earth, is one which I hold to be fundamental for the understanding of Greek religion'.

¹² On this distinction, cf. Guthrie, *op. cit.*, 113 ff.

¹³ White is associated with good luck: a white vote was used, in classical times, for acquittal (e.g. Luc., *Harm.* 3); cf. the expression 'λευκή ἡμέρα' for a lucky day. Conversely, black is the colour of death (e.g. *Il.* ii 834) and is associated with various things and personifications of evil omen: in Aeschylus, for instance, it is used of the Erinyes (e.g. *Ag.* 462 f.) of misfortune (*Supp.* 89), of *Ἄτη* (*Ag.* 770) and of a curse (*Th.* 832). It may be that as a general rule

the colour of the victim sacrificed to an Olympian deity was white, that of the chthonians' sacrificial victims black (cf. *Il.* iii 103 ff., where a white ram and a black ewe are sacrificed to the sun and to earth). Other general distinctions between the rites associated with the Olympians and those of the chthonian deities have been collected by Guthrie, *op. cit.*, 221 f., and several of these reflect the symbolic associations of such pairs of opposites as up and down, high and low.

¹⁴ At *Th.* 591 ff. the whole race of women—Pandora's offspring—is 'δλώιον', a *πῆμα μέγα* to men, and at *Op.* 90 ff. it is said that before Pandora, men lived on earth free from evils, suffering and disease. The idea of the innate inferiority of women recurs, of course, in Greek philosophy: in the *Timaeus* goef, it is suggested that cowardly and unjust men are transformed to become women in their second incarnation, and Aristotle considers the female sex a deviation from type, a 'natural deformity', cf. *GA* 767b 6 ff., 775a 14 ff.

Although we cannot, of course, speak of any developed or systematic Table of Opposites in Homer or Hesiod, it is interesting to consider the correlations which are made between the positive poles of many of these pairs of opposites on the one hand, and between their negative poles on the other. The identification of light and east and the colour white, and sky and up, on the one hand, and of darkness and west and the colour black, and earth and down, on the other, corresponds to certain facts of observation. Again the conception of the earth as female (or a mother), and of the sky as a generating male, is based on an obvious analogy between the growth of plants and sexual reproduction. On the other hand, at *Il.* xii 238 ff. we find that *right* is identified with *east* and the sun, and *left* with the 'misty west'. This identification seems more arbitrary,¹⁵ though, as was noted above, there are parallels for it in other societies.

III

Having considered very briefly the symbolic associations of certain pairs of opposites in early Greek literature as a whole, my next task is to discuss how some of these beliefs may have influenced the theories of the Greek philosophers; and here I refer not only to religious or ethical doctrines, but also, and more especially, to some of the explanations which they put forward to account for various complex natural phenomena. In this context, the use of the opposites right and left is particularly remarkable.

The pairs right and left, male and female, light and darkness appear, of course, in the Pythagorean Table of Opposites given by Aristotle at *Metaph.* A 5 986a 22 ff.¹⁶ It is not certain which group or groups of Pythagoreans may have held the doctrine of the *συστοιχία*, nor can we date the Table in the form given by Aristotle with any great degree of assurance. One thing which is clear, however, is that the arranging of right, male and light on one side, the side of the good, and of left, female and darkness on the other, the side of the bad, corresponds to notions which are implicit, to a greater or less extent, in the earliest Greek writers. This feature of the Pythagorean Table could be seen as the explicit expression, or rationalisation, in ethical terms, of very early Greek beliefs.¹⁷ Elsewhere too in Greek philosophy, some of these pairs of opposites are correlated together in passages which have a religious or mystical context. In the eschatological myth in the Republic (614c f.) for example, the souls of men are imagined as divided by their judges into two groups: the just travel to the *right*, *upwards* through the *sky*, carrying tokens of their judgement on their *fronts*, and the unjust go to the *left*, *downwards* (into the *earth*) bearing their tokens

¹⁵ It has been suggested that Hector's words at *Il.* xii 238 ff., 'τῶν (sc. οἰωνῶν) οὐ τι μετατρέπομ' οὐδ' ἀλεγίζω, | εἴ τ' ἐπὶ δεξιῇ ἴωσι πρὸς ἥω τ' ἡέλιόν τε, | εἴ τ' ἐπ' ἀριστερὰ τοί γε ποτὶ ζόφον ἡρόεντα' refer simply to the position of the Trojan lines, facing North, but it is surely much more likely that they describe a general method of interpreting omens, in which ἐπὶ δεξιᾷ is identified with πρὸς ἥω. The theory (taken up more recently by J. Cuillandre, *La droite et la gauche dans les poèmes homériques*, Paris, 1943) that right is identified with light because the worshipper faces the rising sun, which then passes to his right on its transit westwards, was rightly dismissed by Hertz, *op. cit.*, n. 86. A decisive argument against the theory is that we should expect the *opposite* correlation to be made by many peoples in the *southern* hemisphere (if they face the sun at its rising, it passes, of course, to their left) whereas this

is not the case: for the Maori and Australian aborigines, for example, right is the good side and is associated with life and light, as for the ancient Greeks.

¹⁶ The complete list of opposites is: πέρας ἄπειρον, περιττὸν ἄρτιον, ἐν πλῆθος, δεξιὸν ἀριστερόν, ἄρρεν θῆλυ, ἡρεμοῦν κινούμενον, εὐθὺ καμπύλον, φῶς σκότος, ἀγαθὸν κακόν, τετράγωνον ἑτερόμηκες.

¹⁷ Cf. Hertz, *op. cit.*, n. 50. It may be noted that several of the so-called ἀκούσματα or σύμβολα attributed to the Pythagoreans (or rather to one sect of them) emphasise a ritual distinction between certain pairs of opposites, e.g. 'Putting on your shoes, start with the right foot; washing your feet, start with the left' (Iambl., *Protr.* 21 ᾧ DK 58 C 6; cf. *V.P.* 83, DK C 4). 'Do not sacrifice a white cock' (Iambl., *V.P.* 84; cf. Diogenes' gloss, viii 34, DK C 3: τὸ μὲν λευκὸν τῆς τὰγαθοῦ φύσεως, τὸ δὲ μέλαν τοῦ κακοῦ).

on their backs.¹⁸ But some of these opposites also figure in Greek philosophy in contexts where the purpose of the writer is to account for certain phenomena: we must now consider to what extent the theories and explanations based on these opposites are influenced by earlier beliefs and associations of ideas.

First, we may deal with a group of theories which aim to account for the differentiation of the sexes at birth. The theories which are attributed to Parmenides and to Anaxagoras were both based on the idea of a correlation between male and right, and between female and left. Parmenides apparently held that the sex of the child is determined by its position on the right or left side of the mother's womb (males are on the right, females on the left). Galen quotes Fr. 17 'δεξιτεροῖσιν μὲν κούρους, λαιοῖσι δὲ κούρας' and interprets it in this sense (in *Epid.* vi 48, xvii A 1002 K; cf. Arist., *GA* 763b 34–764a 1, where, however, no specific author is mentioned). Of Parmenides' immediate successors, Empedocles held that the determining factor was the heat of the womb,¹⁹ but Anaxagoras again referred to a difference between right and left, though, unlike Parmenides, he suggested that the determining factor is the side of the body from which the father's seed comes (Arist., *GA* 763b 30 ff.; DK 59 A 107; cf. *GA* 765a 3 ff.). A third version of this theory appears in the Hippocratic treatise *On Superfetation* (ch. 31, L viii 500 8 ff.; cf. also the theory attributed to a certain Leophanes and others by Aristotle, *GA* 765a 21 ff.²⁰): this is that the right testicle is responsible for male children, and the left for females. Other Hippocratic treatises make use of Parmenides' version of the theory (cf. *Epid.* ii sec. 6, ch. 15, L v 136 5 ff.; *Epid.* vi sec. 2, ch. 25, L v 290 7 f.; *Aph.* sec. 5, ch. 48, L iv 550 1 ff.; cf. *Prorrh.* ii ch. 24, L ix 56 19 ff.), or suggest other correlations between the male embryo and the right-hand side of the mother's body (cf. *Aph.* sec. 5, ch. 38, L iv 544 11 ff.). This is, surely, a remarkable series of theories. Although alternative suggestions are made on which part of the body, or which parent, determines the sex of the child, all these writers assume that *male* and *right* are connected, and so too *female* and *left*. We noted above the tendency to identify the positive poles of various pairs of opposites on the one hand, and their negative poles on the other (for which there is evidence not only from the ancient Greeks but from other peoples as well). It is interesting, then, that these attempted explanations of sex took the form of different applications of the theory that male and female derive from right and left respectively. It is impossible to determine what evidence (if any) Parmenides and others may have appealed to, in order to confirm their theories (it may well

¹⁸ Cf. *Laws* 717ab, where 'even' and 'left' are assigned as honours to the chthonian deities, and their superior opposites 'odd' and 'right' to the Olympians.

¹⁹ Galen, who quotes Fr. 67 'ἐν γὰρ θερμότερῳ τοκὰς ἄρρενος ἐπλετο γαστήρ' in *Epid.* vi 48, xvii A 1002 K, probably took Empedocles' theory to be that males are formed in the hotter parts of the womb, females in the colder (he compares it directly with Parmenides' theory which also referred to different *parts* of the womb). But Aristotle, who quotes the equally ambiguous Fr. 65 at *GA* 723a 24 ff., took Empedocles to be referring to variations in temperature in the womb as a whole over the monthly cycle (the womb is hotter at the beginning of the cycle just after menstruation has occurred, cf. 764a 1 ff.). Censorinus' interpretation, 6,6, DK 31 A 81—that Empedocles, like Anaxagoras, held that males were formed by seed from the right-hand side of the body, females by seed from the left—should probably be ruled out: Aristotle clearly differentiates between those (among whom Empedocles) who held

'hot and cold' and those who held 'right and left' as the causes of male and female, cf. *GA* 765a 3 ff.

²⁰ The text of *GA* 765a 21 ff. appears to suggest that Leophanes' theory was that if the *right* testis is tied up, *males* will be produced. Yet either we should transpose the words ἄρρενοστοκεῖν and θηλυτοκεῖν, or they have been mentioned in this order (males first) without due regard for their correlation with what has gone before (right mentioned before left at a 23). That the theory in question was that the right testis is responsible for males (which are, then, produced when the *left* testis is tied up) is clear not only from the passage in *Superf.* L viii 500 8 ff., but from Aristotle's own subsequent remarks. At *GA* 765a 34 ff., he says that the earlier theories which took hot and cold, or right and left, to be the causes of male and female, were not altogether unreasonable, and it is clear that he correlates male with right (and hot), female with left (and cold) and not vice versa: seed from the right side will be hotter, more concocted, and therefore more fertile than seed from the left.

be that fictitious evidence was sometimes claimed to corroborate them, see below on Arist., *GA* 765a 25 ff.), but it seems likely that the earlier symbolic associations of these pairs of opposites contributed to fortify the belief in a connexion between the positive or superior terms, male and right. In contrast to the Greek theory, it may be noted that among the ancient Chinese (who held the left to be more honourable than the right) there were theorists who believed that an embryo on the left of the womb would be a boy, one on the right, a girl, proposing a theory opposite to that of the Greeks, but in keeping with their own associations for left and right.²¹

One group of theories put forward by some Presocratic philosophers and Hippocratic writers consists of attempted correlations between male and right, female and left. But we may now show how similar theories continued to appear in fourth-century philosophy, in Aristotle himself. Aristotle, it is true, rejects the idea that right and left in some way determine the sex of the child. He criticises the theory that the two sexes are formed in different parts of the womb in *GA* iv 1,²² and in so doing, he refers to the decisive evidence of anatomical dissections: 'moreover male and female twins are often found in the same part of the uterus: this we have observed sufficiently by dissection in all the Vivipara, both land-animals and fish' (*GA* 764a 33 ff.). His criticisms of Leophanes' theory (that sex is determined by the seed coming from the right or left testicle of the male parent) are also interesting. He says at *GA* 765a 25 ff. that some theorists claimed that when one of the testicles of a male parent animal was excised, certain results followed (i.e. their offspring were all of the same sex): 'but they lie; starting from what is likely, they guess what will happen, and they presuppose that it is so, before they see that it is in fact so'. These passages clearly mark an important step forward. Aristotle here insists on the careful use of evidence to verify or falsify the theories which were put forward. Where others had been content to assume that males were formed in the right side of the womb, and females in the left, Aristotle uses dissection to prove that this does not hold as an absolute rule.²³ It might be thought, on the basis of these passages, that Aristotle himself was free from preconceptions on the subject of right and left and other such opposites. But in point of fact, this is certainly not the case. His use of the pairs right and left, above and below, and front and back, in particular, is worth considering in detail.

In Aristotle's theory, right and left, above and below, front and back are not merely relative terms. Right, above and front are said to be the *ἀρχαί*, the starting-points or principles, not only of the three dimensions, breadth, length and depth, respectively (*Cael.* 284b 24 f.), but also of the three types of change, locomotion, growth and sensation, in living beings (*ibid.*, 284b 25 ff.). In *IA* ch. 4, 705b 29 ff., for example, Aristotle attempts to establish that all locomotion, in animals, proceeds from the right. The main evidence for this which he brings is (1) that men carry burdens on their left shoulders, (2) that they step off with the left foot—in both cases, according to Aristotle, the right is the side which initiates movement—and (3) that men defend themselves with their right limbs.²⁴ Because

²¹ Cf. Granet, *op. cit.*, 370.

²² The evidence from dissections is first introduced at *GA* 764a 33 ff. when Aristotle is criticising Empedocles' theory (that hot and cold are the causes of male and female), but it is also relevant to Parmenides' theory that males are produced on the right of the womb, females on the left, and Aristotle refers to it again when criticising that theory later, at *GA* 765a 3 ff. (cf. 16 ff.).

²³ A passage in *HA* vii 3 (583b 2 ff.) is interesting. There Aristotle says that the first movement of male embryos usually takes place on the right side of the womb, that of females on the left, although he goes on to qualify or correct this statement: 'οὐ μὲν ἀλλ'

ἀκρίβειάν γε τούτων οὐδεμίαν ἐποληπτέον'. This might, perhaps, be taken as evidence that, at one stage, Aristotle had been less critical of the theory that males are on the right, females on the left, of the womb.

²⁴ Aristotle also notes (*IA* 705b 33) that it is easier to hop on the left leg, and elsewhere (*PA* 671b 32 ff.) he says that men raise their right eyebrows more than their left. Some of his evidence seems to be contradictory: while he states that men step off with the left foot (*IA* 706a 6 ff.), he believes that horses step off with the off-fore (712a 25 ff.). His interpretation of much of the evidence which he adduces appears to be quite arbitrary.

he assumes that the motion of the heavenly sphere (which he thinks of as alive, cf. *ἐμψυχος*, *Cael.* 285a 29) must be 'from the right' and 'ἐπὶ τὰ δεξιὰ',²⁵ he infers at *Cael.* 285b 22 ff. that the northern hemisphere, the one in which we live, is the lower of the two hemispheres. Again, because 'upwards' is defined in relation to the place from which food is distributed and from which growth begins (cf. e.g. *IA* 705a 32 f.), the 'upper' portion of plants will be where their roots are, and Aristotle accordingly speaks of plants as 'upside down' (e.g. *PA* 686b 31 ff.; *IA* 705b 6; cf. *PA* 683b 18 ff. on the Testacea). Right, above and front are, then, defined by certain functions, but Aristotle holds that these are *more honourable* than their opposites. Thus at *IA* 706b 12 f. he says that 'the starting-point is honourable, and above is more honourable than below, and front than back, and right than left'. Further, this notion becomes an important doctrine in anatomy, for Aristotle believes that 'as a whole, unless some more important object interferes, that which is better and more honourable tends to be above rather than below, in front rather than behind, on the right rather than on the left' (*PA* 665a 22 ff.). He uses this principle to explain such facts as the relative positions of the windpipe and the oesophagus (*PA* 665a 18 ff.), and of the 'great blood-vessel'²⁶ and the aorta (*PA* 667b 34 ff.),²⁷ as also to give an account of the function of the diaphragm (to separate the nobler, upper parts of the body from the less noble, lower parts, *PA* 672b 22 ff.). The faithfulness, one may almost say stubbornness, with which Aristotle adheres to his conception of the essential superiority of right to left, can be seen in his account of the position of the heart. This organ he considers to be the principle of life and the source of all movement and sensation in the animal (*PA* 665a 11 ff.). At *PA* 665b 18 ff., he says that the heart, in man, 'lies about the middle of the body, but rather in its upper than in its lower half, and more in front than behind. For nature has established the more honourable part in the more honourable position, where no greater purpose prevents this.' Faced with the obvious difficulty that the heart lies on the left side of the body and not on the more honourable right, Aristotle argues that this is to 'counterbalance the chilliness of the left side' (*PA* 666b 6 ff.). On this occasion, when he encounters an obvious and important fact which apparently runs counter to his theory of the superiority and greater nobility of the right-hand side, he does not abandon that theory, but refers to a second arbitrary assumption, the (purely imaginary) general distinction between the temperature of the two sides of the body.

In explaining the position of the heart in man, Aristotle refers to a difference in heat between the right and left sides of the body. In man, the heart is slightly inclined towards the left because the left side of the body is particularly cold in his case (cf. *PA* 666b 9 f.). Elsewhere too, he refers to differences in the heat and purity of the blood in accounting for

²⁵ On the complex problem of the meaning of the phrase 'ἐπὶ τὰ δεξιὰ' as applied to circular motion, and its interpretation in *Cael.* 285b 20, cf. A. F. Braunlich, *AJP* lvii (1936) 245 ff.; cf. A. Boeckh, *Untersuchungen über das kosmische System des Platon* (Berlin, 1852) 112 ff.; H. D. Darbishire, *Reliquiae Philologicae* (Cambridge, 1895) 65 ff.; T. L. Heath, *Aristarchus of Samos* (Oxford, 1913) 231 ff. Whether 'ἐπὶ τὰ δεξιὰ' applied to circular motion meant the direction which we call 'clockwise', or the direction we call 'counter-clockwise', the association with right marks it clearly as the *more honourable* direction.

²⁶ The blood-vessel which Aristotle calls *ἡ μεγάλη φλέψ* corresponds to the superior and inferior *Venae Cavae*: whether we take it also to include the right auricle of the heart itself will depend on how we interpret the three chambers of the heart which Aristotle recognises. See further n. 30.

²⁷ Cf. also on the relative position of the two kidneys (*PA* 671b 28 ff.): Aristotle believes that the right kidney is always higher than the left (although in fact this is not so, e.g. in man himself, where the left kidney is usually higher), and he gives the reason that motion starts from the right, and organs on the right push upwards above their opposites. He also believes that the right kidney is less fat than the left (*PA* 672a 23 ff.) and again explains this by referring to the right side being better suited for motion. Several more instances in which Aristotle explains the relative positions of organs, and other phenomena, by referring to the superiority of right, front and above over their opposites, left, back and below, are given by W. Ogle in a note to *PA* 648a 11 (Ox. trans., 1912).

the general superiority of the upper parts of the body over the lower, of the male animal over the female, and of the right side of the body over the left (*PA* 648a 2–13). At *PA* 670b 17 ff., he accounts for the ‘watery’ quality of the spleen in some animals partly by referring to the generally ‘wetter and colder nature of the left side’ of the body.²⁸ He then goes on ‘διήρηται γὰρ τῶν ἐναντίων ἕκαστον πρὸς τὴν συγγενῇ συστοιχίαν, οἷον δεξιὸν ἐναντίον ἀριστερῷ καὶ θερμὸν ἐναντίον ψυχρῷ · καὶ σύστοιχα γὰρ ἀλλήλοις εἰσὶ τὸν εἰρημένον τρόπον’ (*PA* 670b 20 ff.). It is interesting that this theory that the right side of the body is hotter than the left, is mentioned in *GA* iv 1 where Aristotle discusses what determines the sex of the embryo. Although, as already noted, he argues strongly in this chapter against earlier theories that the sex of the child is determined by the part of the womb in which it is conceived, yet at the end of his discussion of his predecessors’ ideas, at *GA* 765a 34 ff., he grants that ‘to suppose that the cause of male and female is heat and cold, or the secretion (*ἀπόκρισις*, i.e., seed) which comes from the right or the left side of the body, is *not unreasonable* (*ἔχει τινὰ λόγον*)’: the right side of the body is hotter than the left, and hotter semen, being more ‘concocted’, is more fertile than cold and therefore more likely to produce males. Though he goes on to say (b 4 ff.) that ‘to speak in this way is to seek the cause from too great a distance’, he does, to some extent, accommodate earlier views to his own theory.²⁹ Yet if we examine this theory of the greater heat of the right-hand side of the body more closely, it is apparent that Aristotle’s argument is circular. At *PA* 666b 6 ff., the heart is said to be on the left, in man, to counteract the chilliness of the left-hand side of the body. Yet elsewhere Aristotle suggests that the factor on which this difference in temperature depends is the heart itself. According to the account in *HA* and in *PA*,³⁰ the heart, in most species, has three chambers, of which the right-hand chamber is the largest and contains the most abundant and hottest blood,³¹ and at *PA* 667a 1 f., for example, he refers to this fact as the reason for the whole of the right-hand side of the body being hotter than the left. There would seem to be an anomaly in arguing (1) that in man the heart is on the left to counteract the excessive chilliness of that side, when (2) the difference in temperature between the two sides of the body is itself seen as the result of a difference in the temperature of the blood in the left and right chambers of the heart. Other things being equal, we should expect that the effect of the heart being displaced from the central position which Aristotle believes it occupies in the great majority of animals, would be to *warm* that side towards which it was displaced, and this is indeed the effect which Aristotle ascribes to the

²⁸ Aristotle believes that the spleen on the left in some way balances the liver on the right, cf. *PA* 669b 26 ff., 36 ff.

²⁹ According to Aristotle’s own theory, stated at *GA* 765b 8 ff., male and female are distinguished by their ability or inability to concoct and discharge semen, yet because concoction works by means of heat, males must be hotter than females (b 15 ff.). Further, it is due to a lack of heat that females are formed (the male element is too weak to master the female, 766b 15 ff.: Aristotle believes that young people, those in old age, and people of a ‘wet’ or ‘feminine’ disposition are all more likely to produce female children, *GA* 766b 27 ff., and these are all persons in whom the ‘natural heat’ is weak, b 33 f.).

³⁰ There is some doubt as to which are the three chambers of the heart to which Aristotle refers (e.g. *HA* 513a 27 ff.; *PA* 666b 21 ff., cf. *Somn. Vig.* 458a 15 ff.). Ogle (note to *PA*, *loc. cit.*, Ox. trans.) took them to be the two ventricles and the left auricle (he thought the right auricle is taken to be part of the ‘great blood-vessel’, cf. *supra*, n. 26). D’Arcy Thomp-

son, on the other hand, took ‘the largest of the three chambers’ (*HA* 513a 32; cf. *PA* 666b 35 f.) to refer to the right auricle and ventricle combined (note to *HA*, *loc. cit.*, Ox. trans., 1910), which would account for the statement that the other two chambers are ‘far smaller’ (*HA* 513a 34 f.) than the third. The suggestion that traditional or mystical ideas have influenced Aristotle in ascribing three chambers to the heart, cannot be ruled out, although many features of his account show, as Thompson said, ‘clear evidence of minute inquiry’.

³¹ Ogle (note to *PA* 666b 35 f.) pointed out that ‘in an animal, especially one killed by strangulation, as recommended by Aristotle . . ., the right side of the heart and the vessels connected with it would be found gorged with dark blood and contrasting strongly with the almost empty left side and vessels’. (At *HA* 511b 13 ff., Aristotle discusses the difficulties involved in making observations of the vascular system, and at 513a 12 ff., he recommends that the animal to be examined should be starved and then strangled.)

heart being on the left in man: yet we are then left without a reason why the left-hand side, in man, should nevertheless be particularly cold.

Aristotle takes right, above and front to be ἀρχαί, and so superior to, and nobler than, their opposites. He believes, further, that the right-hand side is naturally more active and stronger than the left, not only in man, but also, as a general rule, throughout the animal kingdom. At *PA* 684a 27 f., he generalises: 'τοῖς γὰρ δεξιόις πάντα πέφυκε τὰ ζῶα δρᾶν μᾶλλον'.³² We may now consider to what extent Aristotle qualified his theory of the distinction between right and left in the light of his detailed observations of various biological species, or how far he went beyond, or misrepresented, the facts, in stating his conclusions. Although he states it as a general rule that limbs on the right are stronger than those on the left, he notes certain exceptions. He remarks at *PA* 684a 32 ff. that in the Lobsters (ἀστακοί) it is a matter of chance whether the right or the left claw is the bigger; but he goes on to say that the reason for this is that lobsters are deformed and do not use the claw for its natural purpose but for locomotion (a 35–b 1).³³ Again, such passages as *IA* 714b 8 ff. show that he recognises the fact that right and left are not clearly distinguished in such classes as the Testacea (although he does attempt to establish a *functional* distinction between right and left in his analysis of their method of locomotion³⁴): but again the reason which he gives for the lack of differentiation between right and left in the Testacea, is that they are a deformed class (cf. *IA* 714b 10 f.). On the other hand, some of Aristotle's statements on the subject of the distinction between right and left in animals are in need of qualification. Ogle noted that the remark at *PA* 684a 26 f. 'οἱ μὲν οὖν κάραβοι καὶ οἱ καρκίνοι πάντες τὴν δεξιὰν ἔχουσι χηλὴν μείζω καὶ ἰσχυροτέραν' is 'too absolute a statement'.³⁵ Perhaps more important is Aristotle's failure to recognise that the heart inclines to the left-hand side of the body in other species besides man, for he firmly believes that this is so in *man* alone (cf. *PA* 666b 6 ff.; cf. *HA* 496a 14 ff., 506b 32 ff.). Aristotle undoubtedly had detailed first-hand knowledge of the internal organs of a number of species of animals. It is strange, then, that there are several species, including some with whose internal anatomy he claims to be acquainted,³⁶ in which the heart inclines to the left, as it does in man.³⁷

Aristotle's knowledge of both the external and internal organs of animals, and of their behaviour, is vastly greater than that of any of his predecessors. One of the results of the many dissections which he carried out was to establish that male and female embryos are formed in either part of the uterus, right or left, in all the Vivipara. His observations of many lower species (especially of the Crustacea) are remarkably accurate and detailed. Yet one of the theories which he constantly maintains is that right is naturally and essen-

³² From *PA* 671b 30 f. and 672a 24 f., it appears that Aristotle held that the right side is naturally stronger (and 'drier') than the left. But in several passages he notes that the degree to which right and left are differentiated varies in different species, e.g. *HA* 497b 21 f.; *IA* 705b 21 ff.

³³ Cf. *HA* 526b 16 f., and a description of the two claws (chelae) at 526a 15 ff. It is not true that the chelae are used solely for locomotion (*PA* 684a 35 f.; cf. Ogle, note *ad loc.*): indeed Aristotle himself remarks at *HA* 526a 24 f. that they are naturally adapted for prehension.

³⁴ In some animals, right and left are distinguished not in form, but in function alone (cf. *Cael.* 285a 15 f., b 3 ff.). As regards the stromboid Testaceans, he says that they are 'δεξιὰ' because they do not move in the direction of the spire, but opposite to it (*IA* 706a 13 ff.; cf. *HA* 528b 8 ff., and Thompson's note). He appears to argue that

because they move in the direction opposite to the spire, *therefore* the spire must be assumed to be on the right-hand side.

³⁵ Cf. *IA* 714b 16 ff. Elsewhere, however, Aristotle is somewhat more cautious in his statement of the difference between right and left in the Carcini (Crabs) at least. Cf. *HA* 527b 6 f. 'ὥς δ' ἐπὶ τὸ πολὺ πάντες τὴν δεξιὰν ἔχουσι μείζω χηλὴν καὶ ἰσχυροτέραν'.

³⁶ At *HA* 502b 25 f., Aristotle remarks that the monkey (κῆβος) and suchlike animals (e.g. ape and baboon, πίθηκος and κνυοκέφαλος cf. 502a 16 ff.) are found *on dissection* (διαμεθέντα) to have similar internal organs to those of man. Yet in these animals (as also, e.g., in the mole) the heart is on the left. Cf. Ogle's note to *PA* 666b 6 ff.

³⁷ Aristotle's statement that in all animals which have kidneys the right one is higher (*PA* 671b 28) is another inaccuracy: in man, for example, the left kidney is generally slightly higher than the right.

tially superior to left. He believes that this is true in man, and man is the norm by which he judges the rest of the animal kingdom. As he puts it at *IA* 706a 19 f., for example, man is 'of all animals, most in accordance with nature', and at *PA* 656a 10 ff. in man alone, 'the natural parts are in their "natural" positions, and his upper part is turned towards that which is upper in the universe'.³⁸ The reason that he gives for the absence of any marked distinction between right and left in some species is, then, that they are imperfect or 'deformed' animals. He believes not only that there is what we might call a physiological distinction between right and left—the right side is hotter than the left—but also that in making this distinction nature fulfils an important purpose. The distinction between right and left is an *ideal* which is most fully exemplified in man (cf. *IA* 706a 21 f. 'διὸ καὶ τὰ δεξιὰ ἐν τοῖς ἀνθρώποις μάλιστα δεξιὰ ἐστίν'). It might be said, then, that Aristotle's great knowledge of different biological species served rather to confirm than to weaken his belief in the natural superiority, and the greater nobility, of the right-hand side.

The history of this belief in the inherent superiority of the right-hand side has now been described with evidence from a variety of Greek thinkers down to Aristotle. The Pythagoreans placed right on the side of limit and good, left on the opposite side of the unlimited and evil. Parmenides, Anaxagoras and several Hippocratic writers assumed that the difference between male and female was to be derived from a difference between right and left, correlating the superior, and the inferior, poles of these two pairs of opposites. Aristotle explicitly states that right is the origin of locomotion, and is better and nobler than its opposite, and he uses this theory quite extensively in accounting for such facts as the position of various organs in the body. Not all the theorists who appear to have assumed the essential superiority of the right-hand side, are normally thought to have been influenced by Pythagoreanism. Though Parmenides' relation to the Pythagoreans may well have been close, Anaxagoras' theories bear few signs of direct Pythagorean influence. The Hippocratic treatises *On Epidemics* ii and iv are generally free from Pythagorean conceptions. Although Aristotle's use of the word 'συστοιχα' in connexion with his own theory of the pairs right and left, and hot and cold, at *PA* 670b 22, is reminiscent of the doctrine which he himself describes as 'τὰς ἀρχὰς . . . τὰς κατὰ συστοιχίαν λεγόμενας' (*Metaph.* 986a 22 f.), yet on several occasions he explicitly contrasts his own account of these and other related opposites with that of the Pythagoreans;³⁹ and many of his detailed biological theories based on the distinction between right and left are clearly original. It seems, then, that the belief in the inherent superiority of the right-hand side is not an exclusively Pythagorean doctrine. Indeed, it may be suggested that in some of its elements, the Pythagorean *συστοιχία* itself merely defined and made explicit extremely old, and no doubt widespread, Greek beliefs.

Whether or not we accept Hertz's general theory that in primitive thought certain natural oppositions often stand for the categories of the 'sacred' and the 'profane', it will be granted that for the ancient Greeks, as for many other peoples, such antitheses as sky and earth, light and darkness, up and down, right and left, have powerful symbolic

³⁸ Cf. *HA* 494a 26 ff. It is interesting that elsewhere Aristotle states that man alone of all the animals can learn to be ambidextrous (*HA* 497b 31 f.; cf. *EN* 1134b 33 ff.; *MM* 1194b 31 ff.), yet he continues to believe that the right is 'most right-sided' in man (διὸ καὶ τὰ δεξιὰ ἐν τοῖς ἀνθρώποις μάλιστα δεξιὰ ἐστίν, *IA* 706a 21 f.) and that the right is naturally better than the left and separated from it (*IA* 706a 20 f.).

³⁹ This is so especially in *Cael.* ii 2, where Aristotle

agrees with the Pythagorean idea that right and left apply to the universe as a whole (284b 6 ff.), but adopts the opposite view to theirs, saying that we live in the lower of the two hemispheres, and on the 'left', not, as the Pythagoreans said, in the upper hemisphere and on the 'right' (285b 23 ff.). He also criticises the Pythagoreans for not having recognised above and below, and front and back, as principles, as well as right and left (285a 10 ff.; cf. his own view, expressed at 284b 20 ff.).

associations. The values which attached to the opposites right and left in particular seem to influence some of the theories in which they figure in fifth- and fourth-century Greek philosophy. It was often assumed that right is essentially different from, and superior to, left, the one good, the other evil; or the one connected in some way with masculinity, the other with femininity; or the one thought to be honourable, and an *ἀρχή* (as in Aristotle), the other not honourable. The social factors which are involved in the greater development of the right hand itself, do not pass unnoticed by Greek philosophers (Plato, especially, remarked how childhood training contributes to the greater usefulness of the right hand).⁴⁰ But the belief persisted that right is 'naturally' superior to, stronger and nobler than the left. In Aristotle, the distinction between right and left is conceived not merely as a physiological fact, but as an *ideal*, to which the animal kingdom aspires, but which is most fully exemplified in man. Even a detailed knowledge of different biological species, in many of which there is no distinction, or no marked distinction, between right and left, did not uproot Aristotle's belief that right is naturally stronger and more honourable than left: on the contrary, that knowledge led him to conclude that the differentiation between right and left in man is a mark of man's superiority to the animals, and of his greater perfection.

The two elements, of dogmatic belief, and of empirical observation, are closely interwoven in the history of theories based on right and left. The element of dogmatic assumption appears first of all in the superstitious belief that right is 'lucky' and left 'unlucky', but we have seen that the assumption that right is essentially different from, and nobler than, left, persists in Greek philosophy right down to Aristotle. Yet many Greek philosophers and medical theorists carried out extensive observations, particularly in biology. Sometimes these observations led to the rejection of a particular theory based on the belief in the superiority of the right-hand side, as when Aristotle's dissections established that males and females are not always formed in the right and left sides of the womb respectively. More often, however, when the results of observations did not tally with preconceived opinions (for example, when it was seen that the heart inclined to the left side of the body, in man), those opinions were not abandoned: on the contrary, they were retained, and further dogmatic assumptions were introduced in order to account for the phenomena. It is, perhaps, particularly remarkable that Aristotle, who conducted the most extensive and rigorous biological investigations in antiquity, should nevertheless have firmly and constantly maintained a theory of the distinction between right and left which owes much to the traditional symbolic associations which those opposites had for the ancient Greeks.

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⁴⁰ A radical view of the effects of training and habit on the use of the two hands is expressed in the *Laws* (794d–795d) where Plato recommends that children should be taught to use both hands equally. He criticises the view that right and left are naturally different in their usefulness, pointing out that this is not the case with the feet and the lower limbs

(794d 5 ff.). He says *τὰ δὲ κατὰ χεῖρας ἀνολὰ τροφῶν καὶ μητέρων οἷον χωλοὶ γηγόναντες ἕκαστοι*. He notes that athletes can become quite ambidextrous, and he says that the Scythians are in fact so. (Aristotle too recognises that we can become ambidextrous, but says that the right side is still naturally stronger than the left: *EN* 1134b 33 ff.; cf. *MM* 1194b 31 ff.)

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