Psychological Arguments in the Hippocratic Treatises *On the Sacred Disease* and *Airs, Waters, Places*

Masahiro Imai

Introduction

The aim of my discussion is to explore characteristic features of human psychology in Hippocratic medicine by focusing on the psychological arguments developed in the two Hippocratic treatises *On the Sacred Disease* (*Morb.Sacr*.) and *Airs, Waters, Places* (*Aer.*). Through an analysis of some of the key concepts which I suppose to be most crucial for illuminating Hippocratic medical psychology, I want to make it clear that Hippocratic doctors contributed a great deal to the development of ancient Greek psychology in the fifth and fourth centuries BC.

Before I start with my discussion, I want to make some preliminary remarks on the two Hippocratic treatises which I will consider as the main texts to elucidate Hippocratic medical psychology.[1] The first remark concerns the authorship of the two treatises. In his French edition which was published in the nineteenth century as the most comprehensive set of treatises and documents that make up the Hippocratic Corpus, É. Littré included the treatise *On the Sacred Disease* in the sixth volume, obviously because he had to take into much consideration the general opinion of his

[1] The Hippocratic Corpus that we have today is an amalgam of a large number of medical treatises and documents written by many authors of various intellectual backgrounds. By 'Hippocratic' treatises in my phraseology, I mean a group of medical texts which have been ascribed with some historical certainty to the doctors as members of the Hippocratic medical school of Cos in the fifth and fourth centuries BC. My grouping of 'Hippocratic' treatises almost corresponds with that proposed by J. Jouanna, who specifies them as a set of medical texts that form the original core of the Corpus and are due to the school of Hippocrates (c.460-370 BC), known as the medical school of Cos. See J. Jouanna, *Hippocrates*, translated by M. B. DeBevoise (Baltimore: The Johns Hopkins Press, 1999), p.65. For the most recent discussion of this topic, see B. Gundert, 'Soma and Psyche in the Hippocratic Medicine', in J. P. Wright and P. Potter (edd.), *Psyche and Soma: Physicians and Metaphysicians on the Mind-Body Problem from Antiquity to Enlightenment* (Oxford: Clarendon Press, 2000), pp.13-35. Gundert deals with a large number of treatises in the Hippocratic Corpus in her discussion, including the ones traditionally ascribed to the doctors who belonged to the school of Cnidus and also the ones with a strong tendency to Pre-Socratic philosophy, such as *On Breaths*, *On Fleshes* and *On Regimen*, in an attempt to present an overall view of human psychology in Hippocratic medicine. However, I am sceptical about the legitimacy of making such an approach to this topic, without taking into much account the various intellectual backgrounds of authors of the treatises in the Corpus.

contemporary scholars who did not want to grant it the authenticity of Hippocrates.[2] The situation has drastically changed since the beginning of the twentieth century, when U. von Wilamowitz-Moellendorff published a very influential article on the treatise. In his article, Wilamowitz insisted that it was probably written by the same person as the author of the treatise *Airs, Waters, Places*, which had traditionally been ascribed to Hippocrates himself.[3] The same authorship of the two treatises is now almost unanimously accepted by modern Hippocratic scholars.[4] It seems to be natural that the majority of modern scholars have come to this conclusion, given the fact that there are lots of elements which the two treatises obviously have in common both in the form of arguments and in terms of vocabulary and phraseology, particularly because they share the same opinion that every disease has its nature (φύσις) and its exciting cause (πρόφασις), and that nothing arises without nature.[5] That is the reason why I am sure that it will be appropriate to take up these two treatises together in my discussion below. As far as human psychology is concerned, however, it will turn out that they do not presuppose the same conceptual framework for describing and explaining various types of psychic states and activities of a human being.

As a second point, I want to refer to the matter of relative chronology between the two Hippocratic treatises. There still remains a difference of opinions among modern Hippocratic scholars as to the question which of these two treatises is to be dated anterior or posterior to the other.[6] However, I would insist that the treatise *On*

---

[2] É. Littré (éd.), *Œuvres complètes d' Hippocrate, traduction nouvelle avec le texte grec en regard*, 10 tomes (Paris, 1839-1861), reprint. A. M. Hakkert (Amsterdam, 1973-1978), tome 1, pp.353-355.

[3] U. von Wilamowitz-Moellendorff, 'Die hippokratische Schrift περὶ ἱρῆς νούσου', *Sitzungsberichte der Preussischen Akademie der Wissenschaften* (1901), pp.2-23. According to Wilamowitz, there are principally four resemblances between these two treatises: 1) both strongly deny the existence of a disease called 'sacred', i.e. a disease which may occur due to the intervention of divine entities, 2) they share the opinion that seed comes from every part of the body, 3) a specific emphasis is made on influences of the change of seasons on the healthy or diseased condition of the human body, and 4) there are strong similarities both in vocabulary and in style between them. On the second point, see text to notes 7-9 below. Incidentally, Wilamowitz affirmed that the author of the two treatises does not have to be identified with Hippocrates himself. See his *Griechisches Lesebuch*, I 2 (Berlin, 1902), p.199.

[4] See H. Grensemann, *Die hippokratische Schrift „Über die heilige Krankheit"* (Berlin: Walter de Gruyter & Co., 1968), p.18. See also J. Jouanna (éd.), *Hippocrate, tome II, 2 e Partie, Airs, Eaux, Lieux* (Paris: Les Belles Lettres, 1996), pp.71-73.

[5] *Morb.Sacr.*, ch.2 (5) [VI 364, 9-11. Littré] and also *Aer.*, ch.22 [II 78, 1-2. Littré]. In Littré's edition, chapters of the treatise *On the Sacred Disease* are divided in a different manner from those of the Loeb edition by W. H. S. Jones (*Hippocrates II*, Cambridge, Massachusetts: Harvard University Press, 1923). The chapters of Jones' edition will be indicated in my discussion in round brackets.

[6] See Jouanna (1996), pp. LXXIII-LXXIV.

the Sacred Disease was written earlier than the treatise *Airs, Waters, Places*, because the author of the latter treatise seems to be developing his own arguments, following the arguments in the other, as is most obviously the case with his explanation of how particular kinds of characteristic features are transmitted by heredity from parents to their children. The author of the treatise *On the Sacred Disease* insists that the seed (γόνος) comes from every part of the body, and that healthy seed comes from the healthy part, while diseased seed comes from the diseased part of the body.[7] This is one of the most popular ancient embryological theories called *pangenesis*, on the basis of which the author of the treatise gives his explanation of hereditary transmission of the individual constitution prone to the 'sacred' disease, which he claims to originate from the unhealthy condition of the brain, though it was then most commonly held to be due to the intervention of divine entities such as gods and the like.[8] We also find the reference to the pangenetic theory in chapter 14 of the treatise *Airs, Waters, Places*. The author explains how a particular kind of characteristic feature artificially formed into the body is transmitted from parents to their children, by insisting that the seed comes from every part of the body, healthy seed from the healthy part and diseased seed from the diseased part of the body, though, in view of his arguments there, it may be inappropriate for the author to mention the healthy and diseased nature of the seed.[9] This seems to be an indication

[7] *Morb.Sacr.,* ch.2 (5) [VI 364, 19-20. Littré].

[8] The main sources of information about the pangenetic theory in ancient Greek embryology are medical texts, including these two Hippocratic treatises *On the Sacred Disease* and *Airs, Waters, Places* and some 'Cnidian' treatises *On Generation*, *On the Nature of Child* and *Diseases IV*. The theory has generally been ascribed to Democritus (*fl.*c.420 BC) in doxographic tradition (H. Diels-W. Kranz (Hgg.), *Die Fragmente der Vorsokratiker*, 6.Auflage, 3 Bde (1951/ Zürich, 2004) [=DK] 68A141, 68A143, 68B32, 68B124). Some scholars hold that Democritus had a decisive role in the formation and development of the theory, which was then taken over by Greek doctors in their attempt to give a systematic account of some of the important issues, such as the inheritance of similarities from parents to their children. See E. Resky, *Die Zeugungs-und Vererbungslehren der Antike und ihr Nachwirken* (Mainz: Akademie der Wissenschaften und der Literatur, 1950), pp. 1294-1300, and I. M. Lonie, *The Hippocratic Treatises On Generation, On the Nature of Child, Diseases IV* (Berlin, New York : Walter de Gruyter, 1981), pp.115-117. However, I would rather suggest that the pangenetic theory had the origin of its theoretical form in the tradition of Greek medicine and then came to the focus of attention among Pre-Socratic philosophers, so that it developed into one of the most influential doctrines in ancient Greek embryology before Aristotle (384-322 BC). See my article (in Japanese), 'The Pangenetic Theory in the Tradition of Greek Medical Science', *Journal of History of Science, Japan* (*Kagakushi Kenkyu*), Vol.48 (No.249), 2009, pp.22-33.

[9] *Aer*., ch.14 [II 58, 12-60, 6. Littré]. M. Pohlenz, *Hippokrates und die Begründung der wissenschaftlichen Medizin* (Berlin: Walter de Gruyter, 1938), p.44, Anm.1, explains that this is also the case with the treatise *On Generation*, ch.8 [VII 480, 7-482, 2. Littré]. Pohlenz assumes that the author of the treatise *On Generation* may bear in mind the relevant passage of *Morb.Sacr*., when he claims that 'weak seed comes from the weak parts, while strong seed comes from the strong parts', though he tries to argue there that seed comes from both parents.

of the fact that the author of the treatise *Airs, Waters, Places* wrongly cited the relevant passage from the arguments of the treatise *On the Sacred Disease*, when he was giving an explanation of hereditary phenomena of his own interest on the theoretical basis of *pangenesis*.

The authorship of these two Hippocratic treatises and their relative chronology have been among the most crucial issues in the tradition of Hippocratic scholarship in its attempt to elucidate the genesis of each one of the medical texts transmitted in the Hippocratic Corpus. I suppose that my discussion below about psychic aspects of a human being in Hippocratic medicine, with a specific focus on the psychological arguments in these two Hippocratic treatises, will shed a new light on the authorship of the treatises and their chronological relationship.

The Encephalocentric Model of Human Psychology

I begin with an analysis of psychological arguments developed by the author of the treatise *On the Sacred Disease*, which is well known as one of the most polemical texts in the Hippocratic Corpus. The author starts his arguments with an open criticism of those who hold that a particular kind of disease called 'sacred' (i.e. epilepsy) is due to the intervention of divine entities like some gods, ghosts, and so on. These people believe that they have a special knowledge of treating patients whom they claim to cure by means of some religious rites, such as purifications, incantations, and prohibitions of particular kinds of food and way of life. The author denounces their explanation of the disease and their principles of its treatment as contradictory, because they call the disease 'sacred' or 'divine' in the sense that it is caused by divine entities, so that it may well be regarded as being beyond human control, but they usually make use of remedies invented by humans to cure people suffering from it.[10]

In opposition to their supernatural explanation of the disease, the author insists that it has its nature (φύσις) and its exciting cause (πρόφασις), as is also the case with all other diseases. He then provides a rational explanation of the disease, with the claim that it originates from the brain which has not been purged enough to be in its healthy condition. This is especially the case with people of phlegmatic

[10] *Morb.Sacr.*, ch.1 (2-4) [VI 354, 12-364, 8. Littré]. More interestingly, the author's criticism of those who hold that the 'sacred' disease is due to the intervention of divine entities extends into their conception of divinity, which he claims to be completely mistaken. The religious rites, such as purifications and incantations, which they make use of as remedies to cure the 'sacred' disease may imply that they think that people suffering from it are 'defiled' or 'polluted' (μιαρός). This is not the case at all, the author persuasively insists, because gods, who are *essentially* divine and holy, cannot be the cause of any defilement or pollution.

constitution. In chapter 3 (6) of the treatise, the author gives a detailed description of vessels (φλέβες), which run throughout the whole body for the purpose of distributing the flow of breath (πνεῦμα) to its parts.[11] When the flow is blocked by fluxes of phlegm called 'catarrh', which run down from the brain flooded with this humour into the vessels, there will be bodily abnormalities like paralyses and spasms, and also some kinds of unusual psychic states, such as lack of intelligence (φρόνησις) and speechlessness, which are symptoms characteristic of the 'sacred' disease.[12]

The author's aetiological account of the disease, as outlined above, may well be regarded as presupposing his own systematic theory on the structure and functions of the brain, which he will propose in his arguments from chapters 14 (17) to 17 (20) of the treatise. In the opening paragraph of chapter 14 (17), the author claims that the brain is the centre of all kinds of psychic phenomena such as emotion, intelligence, thinking, sense perception and moral and aesthetic judgments, and that it is also responsible for their disturbed conditions. He then gives an account of how these disturbances occur in the following passage.

> It is the same organ by which we also get into madness and become delirious, and dread and fear occur to us, sometimes in the night, sometimes even in the daytime, and also bad dreams, inopportune wanderings of thought, aimless anxieties, negligence in customs, and acts that are contrary to habit. And we suffer all these things from the brain, when it is not healthy but becomes hotter or colder, moister or drier than its nature, or when it has suffered any other affection to which it was not accustomed contrary to its nature.[13]

I follow the Greek text given by J. Jouanna in his Budé edition for all the passages to be cited in my discussion below from the treatise *On the Sacred*

[11] *Morb.Sacr.*, ch.3 (6) [VI 366, 10-25. Littré]. The author could not specify the nervous system in the human body, and he could not even distinguish between veins and arteries in his vascular system. It has been acknowledged among the historians of medicine that the distinction between them was first made by Praxagoras of Cos, who was active in the latter half of the fourth century BC. However, he introduced Aristotelian cardiocentric model in his school, where there had been a tradition of Hippocratic encephalocentrism, as represented by the treatise *On the Sacred Disease*. See F. Steckerl, *The Fragments of Praxagoras of Cos and His School* (Leiden: E. J. Brill, 1958), p.65, Fr.30.

[12] *Morb.Sacr.*, ch.7 (10) [VI 372, 4-374, 20. Littré].

[13] *Morb.Sacr.*, ch.14 (17) [VI 386, 22-388, 6. Littré].

Disease.[14] In this passage, the author enumerates several cases of unusual psychic states, such as madness, delirium, fear and anxiety, which he holds to take place when the brain undergoes some abnormal changes in its physical condition. This account obviously presupposes his encephalocentric model of a human being, according to which the brain plays the decisive role as the centre of all kinds of psychic phenomena. This model will be confirmed by detailed explanation of each case of these disturbances, which the author proceeds to give in a series of passages that immediately follow the one cited above. For example, the author explains that madness (μανία) is due to the moistness of the brain, which occurs when it is flooded with an excessive amount of phlegm. If the brain becomes moister than it is in its normal condition, he claims, it is forced to move, which will necessarily make our sense perception unstable.[15]

Now, I want to cite one of the most remarkable passages of the treatise, in which the Hippocratic author will present his encephalocentric model of a human being most systematically with a specific focus on the functions to be assigned to the brain as the control centre of a human being. After having ascribed each case of these psychic disturbances to a particular kind of abnormal change in the physical condition of the brain, he summarizes his arguments as follows.

> For these reasons, I hold that the brain has the most power in a human being. For when it is healthy, it is the interpreter to us of the phenomena originating from the air, while the air provides it with intelligence. Eyes, ears, tongue, hands and feet act in accordance with the judgment of the brain. In fact, intelligence occurs in the whole body, according as it participates in air, while the brain is the messenger for the comprehension. That is because, when a human being draws breath into himself, the air first reaches the brain, and then it is distributed through the rest of the body, after leaving there its best quality, i.e. what is intelligent and also contains judgment.[16]

[14] J. Jouanna, *Hippocrate, tome II, 2 e Partie, La maladie sacrée* (Paris: Les Belles Lettres, 2003).
[15] *Morb.Sacr.*, ch.14 (17) [VI 388, 6-11. Littré]. This explanation may well be regarded as representing one of the earliest and scientifically founded accounts of madness in the history of psychopathology, though it might possibly be modeled on the brain physiology ascribed in doxographic tradition to Alcmaeon of Croton, a natural philosopher and physician around 500 BC (DK24A5). See on this point Jouanna (2003), pp. LXIII-LXIV.
[16] *Morb.Sacr.*, ch.16 (19) [VI 390, 10-20. Littré].

In this passage, the author gives a detailed account of the two functions of the brain, which he thinks to be essential for it as the centre of all kinds of psychic states and activities of a human being. At the beginning of the passage cited above, the author defines its fundamental role as the interpreter (ἑρμηνεύς) to us of the phenomena originating from the air. And further, he explains that it is endowed with this function by the air which is drawn from without into the brain and provides intelligence for it. It seems to be somewhat difficult to identify what the author intends to mean there by the phrase of 'the phenomena originating from the air' (τῶν ἀπὸ τοῦ ἠέρος γινομένων), but we may well identify them with the so-called sensory impressions. Thus, in this definition, the author seems to assume a psychophysiological model which might possibly be described as follows. When our particular sense organs are stimulated by external objects, these stimuli are transformed there into sensory impressions which are then transmitted by the flow of breath running through the vessels to the brain, whereby they will be formed into our experience of seeing or hearing some particular objects. When, on the other hand, the brain is forced to move by the overflow of phlegm, it will not be able to work any longer to form the sensory impressions transmitted there into our normal perceptual experiences, as is exactly the case with madness which I have already mentioned above.[17]

Then, the author turns his attention to another aspect of the working of the brain which functions as the control centre of voluntary motions of the body, when he explains that our eyes, ears, tongue, hands and feet act in accordance with the judgment of the brain. These motions will occur, he thinks, when instructions are transmitted from the brain by the flow of breath through the vessels to each one of these parts. He proceeds to define this function of the brain as the messenger (διαγγέλλων) for the comprehension (σύνεσις), as contrasted in this context with the other parts of the body which will follow its instructions, in so far as they may take a share of intelligence, provided by the air constantly running throughout the whole body.[18] This seems to be confirmed by the arguments of chapter 7 (10) of the

[17] See text to note 15 above.

[18] On the distinction that the author makes between intelligence (φρόνησις) and comprehension (σύνεσις), See P. van der Eijk, *Medicine and Philosophy in Classical Antiquity: Doctors and Philosophers on Nature, Soul, Health and Disease* (Cambridge: Cambridge University Press, 2005), p.127. For the phrase 'ἐς τὴν σύνεσιν' [VI 390,15-16.Littré] in this definition of the function of the brain, I follow the interpretation given by Jouanna (2003), p.121, who takes the preposition 'ἐς' as indicating a point of view. Grensemann (1968), p.87 and Hüffmeier, who take it as indicating a destination to which something is directed, hold the author's definition here to the effect that the brain is the messenger to the comprehension. See F. Hüffmeier, 'Phronesis in den Schriften des

treatise, where the author explains that the air, which is drawn from without through our mouth and nostrils, first reaches the brain, and then, some amount of it runs into the vessels and thus provides intelligence and movement (κίνησις) to the parts of the body.[19] With regard to the specific function of the brain as the messenger for the comprehension, on the other hand, the author claims that it is due to the air which, when drawn from without into the brain, leaves there its best quality (ἀκμή), i.e. what is intelligent and also contains judgment (γνώμη).[20]

So much is a general description of the psychophysical arguments developed by the author of the treatise *On the Sacred Disease*, which are based characteristically on his encephalocentric model of human psychology. The crucial point, which may deserve most attention, is that the author regards psychic phenomena as what may constitute our subjective experiences, and thus distinguishes them from physical phenomena which he holds to belong specifically to the human body as a whole and its parts. It turn out to be obvious from his arguments, as outlined above, that the author attributes all kinds of psychic states and activities such as emotion, intelligence, thinking, sense perception and moral and aesthetic judgments and also their disturbed conditions to each human being in the sense that he or she is the subject of all these states and activities.[21] This will be confirmed most definitely by the passage already cited above from chapter 14 (17) of the treatise, where the author describes several cases of unusual psychic states which he holds to take place as corresponding to some particular kinds of abnormal changes in the physical condition of the brain. I want to draw specific attention to the second sentence of the passage.

Corpus Hippocraticum', *Hermes* 89 (1961), pp.51-84. In that case, however, we cannot clearly differentiate between the two functions of the brain defined by the author as the 'interpreter' (ἑρμηνεύς) and as the 'messenger' (διαγγέλλων).

[19] *Morb.Sacr*., ch.7 (10) [VI 372, 14-21. Littré]. I am inclined to follow the Greek text emended by Grensemann (1968), p.72, who deletes the phrase 'καὶ ἐς τὸν ἐγκέφαλον' from the controversial sentence [VI 372, 19-21. Littré], which is inconsistent with the author's argument in the passage of chapter 16 (19), because he argues there that the air, which is drawn from without, first reaches the brain, and after that, it is distributed through the rest of the body. I think that his emendation is the easiest way to solve the problem. Jouanna (2003), pp.82-83, assumes that there is a lacuna before the phrase in question, while retaining it in the text. Unfortunately, this does not result in a complete solution to the problem, as Jouanna himself admits it.

[20] The author defines the best quality of the air left in the brain as (a) being intelligent and *also* (b) containing judgment. I hold that (b) is the property by which the brain is specifically endowed with its role as the messenger for the comprehension, i.e. the control centre of voluntary motions of the human body.

[21] In the author's encephalocentric model of human psychology, the air by itself does not seem to be intelligent and therefore, it will not be entitled to the subject of these psychic states and activities, but it is rather considered to be a source of our intelligence and ability to make judgment.

> And we suffer all these things from the brain, when it is not healthy but becomes hotter or colder, moister or drier than its nature, or when it has suffered any other affection to which it was not accustomed contrary to its nature.[22]

We can find that the author uses the term of affection (πάθος) at the latter part of the sentence to denote some abnormal changes in the physical condition of the brain, which becomes hotter or colder, moister or drier than its nature (φύσις) or suffers some other change contrary to its nature. The same term is used in its verbal form of the first-person plural (πάσχομεν) at the former part of the same sentence to describe unusual psychic states which will be experienced by us as subjects of them in a situation where our brain undergoes these abnormal changes in its physical condition.

It should be particularly emphasized, on the other hand, that the author does not refer at all to the concept of soul (ψυχή) in his psychophysical arguments for describing and explaining various kinds of psychic states and activities of a human being. This will turn out to be one of the most striking features of human psychology in the treatise *On the Sacred Disease*, when we compare it with the psychological arguments developed in the other treatise *Airs, Waters, Places*. I will now proceed to discuss it in some detail.

Environmentalist Theory on Psychic Aspects of a Human Being

The treatise *Airs, Waters, Places* has traditionally been regarded by many Hippocratic scholars, including the second century AD physician Galen (129-c.210 to 215), as one of the authentic works of Hippocrates.[23] The arguments developed by the author of the treatise are divided into two parts (chapters 1-11 and chapters 12-24), which, however, may be considered to be closely connected with each other in terms of his environmentalist interest in various influences on physical and

[22] See text to note 13.

[23] See Galen, *In Hippocratis Epidemiarum Librum I Commentaria III*, Prooem., E. Wenkebach & F. Pfaff (edd.), Corpus Medicorum Graecorum V 10, 1 (Leipzig, Berlin: Teubner, 1934), pp.3-11. Galen explicitly refers to the treatise *Airs, Waters, Places* as among the authentic works of Hippocrates. For the question concerning the authenticity of the treatise, see Jouanna (1996), pp.8-9 and pp.79-82. I limit myself to making a brief mention of it here, because my discussion is not intended to give an answer to the so-called 'Hippocratic' question.

psychic aspects of a human being from external factors such as climate and the change of seasons.[24]

In the first part of the treatise, the author begins his arguments with a medical analysis of the orientation of each city with respect to winds and the sun and their influences on the bodily condition of its inhabitants who are liable to some particular diseases.[25] Then, he proceeds to give an account of the quality of water peculiar to each place and its effect on the condition of health of the inhabitants who drink it.[26] In the second part of the treatise, on the other hand, the author extends his environmentalist arguments further to a discussion about a large variety of physical and psychic features peculiar to the people who live in some particular regions, and about environmental factors which may function as their formative causes.

As far as the author's human psychology is concerned, I want to draw specific attention to the following passage including the last sentence of chapter 15 and the opening paragraph of chapter 16. I think it to be most informative for us to understand his basic idea of the relationship between physical and psychic aspects of a human being.

> So much is my discussion of the differences in nature and in shape among the people living in Asia. As regards the lack of spirit and the lack of courage, on the other hand, the chief reason why Asians are less warlike and milder in character than Europeans is the uniformity of the seasons, which produce violent changes neither towards heat nor towards cold but are equable. For there do not take place any violent shocks against mind or any violent change of the body, through which it is likely that a man will become more fierce in his passion and also share more of recklessness and

[24] Some modern Hippocratic scholars had doubt about the unity of the treatise, with an emphasis on the difference between these two parts, which probably urged them even to be sceptical about the same authorship of them. See L. Edelstein, *ΠΕΡΙ ΑΕΡΩΝ und die Sammlung der hippokratischen Schriften* (Berlin, 1931), pp.57-59, and further H. Diller, *Wanderarzt und Aitiologe, Studien zur hippocratischen Schrift ΠΕΡΙ ΑΕΡΩΝ ΥΔΑΤΩΝ ΤΟΠΩΝ* (Leipzig: Dieterich'sche Verlagsbuchhandlung, 1934), pp.89-114. Diller insists that the first part (chapters 1-11) was written by an itinerant doctor, while the second (chapters 12-24) was a work written by a scholar who may have applied a Democritean etiological method to the geography and ethnography. Pohlenz (1938), on the other hand, returned to the opinion of those who had no doubt about the same authorship of these two parts, though he assumed that the first part was written by the same author prior to the second which was later added to it. Jouanna (1996), pp.19-21, argues so persuasively for the same authorship of the two parts and also for the unity of the treatise that I myself can completely share the same opinion with him.

[25] *Aer.*, ch.3-6 [II 14, 20-26, 8. Littré].

[26] *Aer.*, ch.7-9 [II 26, 9-42, 6. Littré].

high spirit than he would do when he is always in a monotonous situation.[27]

In this passage, the author, who has completed his discussion about the differences in nature (φύσις) and in shape among the inhabitants of Asia, mentions that they differ in their character (ἦθος) from the inhabitants of Europe. He goes on to give his account of the formation of human character, which he holds to be brought about by natural environments, as is also the case with the formation of nature, conceptualized here as denoting the constitution of the human body, and with that of other physical aspects of a human being, such as shape, stature and form, since the author has explained in previous chapters that these aspects depend mostly on natural environments, such as climate and the change of seasons, which may function as their formative causes.[28]

There are two points which I think to deserve to be focused on in this context. First, the author discusses psychic aspects of the people living in Asia and in Europe, which he holds to be distinguished from their physical aspects, such as the constitution of the body, shape and the like. In fact, this seems to be indicated by the transition of his arguments from the discussion of the differences of physical features among Asians at the end of chapter 15 to a new discussion concerning their character, as contrasted with that of Europeans, which he begins in the next chapter.[29] And secondly, the author seems to explain the distinction between these two aspects of a human being by making it clear that psychic features of the people are to be formed in a different manner from their physical ones, though both of them may have in common natural environments, such as climate and the change of seasons, as their formative causes. It should be noted in the passage cited above that the author refers to two different processes of the formation of human character, i.e.

[27] *Aer.*, ch.15-16 [II 62, 11-64, 3. Littré]. I follow the Greek text edited by Jouanna (1996), who deletes the second 'καὶ' and the phrase 'καὶ τῇ Εὐρώπῃ' from the last sentence of chapter 15.

[28] The term of nature (φύσις), which is collocated here with shape (μορφή) and further with stature (μέγεθος) and form (εἶδος) in chapters 23 and 24 [II 82, 7. Littré; II 86, 8-12. Littré], suggests that the author applies the concept of nature specifically to the domain of the human body. This does not seem to square with the conclusion drawn by Gundert (2000), p.35, who holds that human body and soul are manifestations of the same principle, i.e. nature, which embraces, she claims, the totality of bodily structures, physiological processes, *and* psychic events.

[29] The contrast between the two aspects of the human being is clear enough from the two sentences which constitute the transition as follows: '*So much* (μὲν) is my discussion of the differences in nature and in shape among the people living in Asia. As regards the lack of spirit and the lack of courage, *on the other hand* (δὲ), the chief reason why Asians are less warlike and milder in character than Europeans is the uniformity of the seasons …'(See text to note 27).

1) violent change (μετάστασις) of the human body and 2) violent shocks (ἐκπλήξιες) against human mind (γνώμη), both of which he holds to cause fierceness and high spirit to be formed into human character. In view of human psychology proposed by a medical writer, one would generally suppose 1) violent change of the human body to be a more plausible process of the formation of human character, which may well be regarded as presupposing that psychic features of a human being are dependent in their formation on some physical changes in the condition of the human body. However, the Hippocratic author holds that there is another and more direct process of the formation of human character, whereby 2) human mind *by itself* may undergo violent shocks caused by natural environments without interacting with the body. This would seem to suggest that the author does not necessarily commit himself to the so-called materialist theory of human psychology.

It will be confirmed by the arguments of the passage which immediately follows the one cited above. There, the author insists that social environments like political institutions (νόμοι) may also work as effective factors in the formation of human character, such as courage and cowardice. According to his explanation, a person's mind may be turned away towards cowardice by political institutions, even though he is born courageous and spirited by nature. This is exactly the case, he claims, with those people who are living in Asia, most of which is under the political rule by Persian Kings. And in order to justify it, the author gives a specific example which I think to be most striking.

> All the inhabitants of Asia, whether they are Greeks or non-Greeks, who are not ruled by despots but are autonomous, toiling for their own advantage, are the most warlike of all men. For it is for their own sake that they run their risks and they themselves receive the prizes of their courage and likewise the penalty of their cowardice.[30]

It is obvious in this passage that the author has in mind the Ionian Greeks, since the Ionians have always been living under the military threats of Persian Kings, against whom they need to be more courageous than other people subject to the political rule by the Kings, in order to defend their own political autonomy. It should also be noted that they are exposed to the natural environments, i.e., the uniformity of climates, etc., which the author holds to produce mildness of character as their

[30] *Aer*., ch.16 [II 64, 18-22. Littré].

natural condition of mind. That is the reason why the author claims that they are the most warlike of all men, especially because they have to make much more forceful efforts in their particular social environments to change their natural condition of mind into the opposite direction than any other people living under the influences of natural environments which may be appropriate for growing courage.[31]

This is the case in which social environments function as the formative causes of human character, and these environments work by themselves, independently of natural ones or even in opposition to them. That would be inconceivable in the case of physical features of a human being, such as constitution, shape and the like, which will be formed into the human body. These features may well be regarded as almost dependent on natural environments which function as their formative causes.[32] It is important to note here that the author obviously holds that psychic aspects of a human being have a nature of their own, as distinct from that of his or her physical ones, since indeed he has argued that these two aspects may be formed in quite a different manner as described above.

These arguments will lead the Hippocratic author into making a conceptual differentiation between body and soul, when he takes up the same topic again in the latter part of chapter 23. There, the author tries to give his final answer to the question why Europeans and Asian people are different in their moral characteristics. He insists that Europeans are more courageous than Asian people, because endurance both in body and in soul, originated by the violent change of seasons, grows courage as their own character. He further adds that their political institutions may also work effectively as a factor contributory to its formation, with a special emphasis on the fact that Europeans are not ruled by Persian Kings. Then, he goes on to reiterate a detailed explanation, which is now explicitly based on the concept of soul, as to why Asian people living under the political rule of Persian Kings are

[31] See Jouanna (1996), p.229, n.5, who argues that under the uniformity of climate, people who are not ruled by despots but are autonomous, are *more courageous than* those who are subject to their political rule. However, his argument does not explain why it is that the Hippocratic author refers in the passage to these people as *the most warlike of all men*, using the superlative (μαχιμώτατοι) in order to express their character, which the author claims to have been formed into their mind by their political autonomy.

[32] There are a few exceptional examples of physical features of the human being to which the author refers as being formed specifically by social environments, as is the case described in chapter 14 of the treatise with the tribe called 'Longheads' (οἱ Μακροκέφαλοι), who, considering the long head to be a sign of nobility according to their custom (νόμος), transform the heads of new born children by their hands and with some other artificial devices to increase its length [II 58, 12-60, 8. Littré]. In ch.17, the author also reports on a Scythian tribe called Sauromatae, whose women do not have their right breast, because they have it cauterized, so that the right shoulder and right arm may increase full strength for fighting [II 66, 4-68, 2. Littré].

necessarily cowardly in their character, as sharply contrasted with Europeans who are not ruled by the Kings but have their own political autonomy.

> For men's souls have been enslaved, and they do not wish to run the risks voluntarily and recklessly for the sake of the power of someone else. Autonomous people, however, who take risks on their own behalf and not on behalf of others, voluntarily and eagerly go into danger. For they enjoy the prize of victory themselves.[33]

The first sentence of this passage may deserve special attention. The author explains that as concerns Asian people subject to the rule by Persian Kings, their souls (ψυχαί) have been enslaved, so that they do not wish (οὐ βούλονται) to run the risks in order to promote the power of their masters. I would insist that this passage provides us with one of the earliest examples of the term of soul in ancient Greek literature, which may well be identified with the self of a human being, because the author uses it to denote the subject of human choice and voluntary motions, described here as being responsible specifically for our moral judgments and moral actions.

As has been made clear from his arguments outlined above, the author's main concern is to give a systematic account of a variety of physical and psychic features peculiar to people living in particular regions, the formation of which he holds to be due to all kinds of environmental factors. According to the author, both of these two aspects are principally formed by natural environments. However, he assumes a process of the formation of human character, whereby psychic features of a human being may be formed into his or her mind by the shocks which it undergoes directly from external factors, apart from the other process whereby these features are formed into his or her mind as a result of the violent changes of the body, brought about by natural environments. Furthermore, the author also defines social environments, such as political institutions, as effective factors in the formation of psychic features of a human being. And it is significant to note that he explains that the social environments may sometimes function as their formative causes by themselves, independently of natural ones or even in opposition to them.

These facts will probably entitle us to suppose that the author is not an advocate of the so-called materialist theory of human psychology, since indeed he admits that our psychic features are not necessarily dependent on the physical condition of the

[33] *Aer*., ch.23 [II 84, 20-86, 4. Littré].

body in their formation. This seems to be confirmed by a conceptual differentiation made by the author between body and soul. I am convinced that it is one of the most characteristic aspects of his human psychology. In the most important passage cited above from chapter 23, where the term of soul is used to denote the subject of human choice and voluntary motions, the author obviously holds that the soul is a constituent of a human being, as distinct from the body, though, of course, there is no evidence at all that he might possibly have presupposed that it is an entity substantially independent of the body.

Psychological Arguments in the two Hippocratic treatises

In my discussion so far, I have focused on the psychological arguments developed in the two Hippocratic treatises *On the Sacred Disease* and *Airs, Waters, Places* in the Hippocratic Corpus that we have today through its transmission from antiquity. And I did so with a view to explore characteristic features of human psychology in Hippocratic medicine, as we may call it, because I had supposed it to be illuminated through an analysis of some of the key concepts which may well be regarded as characteristic of explanations given there of psychic states and activities of a human being.

In modern Hippocratic scholarship, these two treatises are now almost unanimously ascribed to the same author. J. Jouanna, for example, refers in his most recent French edition of the treatise *On the Sacred Disease* to the article written by H. Bruun, who concludes that both of them were composed by the same author on the ground that there are remarkable similarities not only in content but also in style and the use of certain words and expressions, as she has shown through lexicographical analysis.[34] However, I am sceptical about her conclusion,

[34] H. Bruun, 'De morbo sacro and De aere aquis locis', *Classica et Mediaevalia* 48 (1997), pp.115-148, in Jouanna (2003), p. LXXII, n.130. I agree with Bruun, who draws specific attention to the fact that these two treatises are most conspicuously similar in the following points: 1) both of them explain that every disease has its nature, 2) they commonly presuppose the pangenetic theory as the theoretical basis of their accounts of human generation, 3) they are based on climatology and meteorological medicine, 4) both of them stress the role played by the brain in the occurrence of the diseases (e.g. epilepsy) caused by the flux of phlegm, and 5) the two treatises contain very similar passages in syntactic structure, the manner of argument, etc. However, even these similarities do not seem to be decisive for us to argue for the same authorship of the two treatises, because we cannot exclude the possibility that the two authors may have had similar views concerning pathology, the theory of generation, etc. On the second point in particular, see text to notes 7-9 above. Rather, I would insist, differences of opinion between the two treatises, including human psychology, may be more substantial in the discussion of their authorship, though I do not altogether agree with F. Heinimann, *Nomos und Physis*, *Schweizerische Beiträge zur Altertumswissenschaft*, Heft 1 (1945/

especially because, as I hope to have made it clear, the two treatises do not presuppose the same conceptual framework of human psychology for describing and explaining various types of psychic states and activities of a human being.

The author of the treatise *On the Sacred Disease* develops psychophysical arguments which are based characteristically on his encephalocentric model of human psychology. The brain is defined there as the centre of all kinds of psychic states and activities, endowed with two functions of its own as the interpreter to us of sensory impressions brought about in particular sense organs by external objects and also as the control centre of all voluntary motions of the body. The author explains that the brain as the messenger for the comprehension transmit its instructions by the flow of breath running through the vessels to each part of the body. It is striking, on the other hand, that the author does not refer at all to the concept of soul in his encephalocentric model of human psychology, though one would expect to find it there as the most common term to denote the subject of human choice and voluntary motions. In fact, this is exactly the case with the psychological arguments in the treatise *Airs, Waters, Places*, where the term of soul is used by the author to denote the subject of human choice and voluntary motions, since he describes it as being responsible specifically for our moral judgment and moral actions. Further, the human psychology proposed by the author of this treatise does refer to a conceptual distinction between body and soul, while, on the other hand, there is no explicit mention of the brain as the centre of our psychic states and activities.

These facts lead us to think again about the same authorship of the treatises *On the Sacred Disease* and *Airs, Waters, Places*, which will turn out to still remain a problematic issue, *pace* Jouanna and almost all the other modern Hippocratic scholars. As regards the matter of relative chronology between these two treatises, there may be no doubt that the treatise *On the Sacred Disease* was written earlier than the treatise *Airs, Waters, Places*, as I have mentioned it in my preliminary remarks above. The two treatises commonly presuppose the pangenetic theory as the theoretical basis of their accounts of human generation, though their focus of interest is different. The author of the treatise *On the Sacred Disease* tries to give an account of hereditary transmission of the individual constitution prone to the ‘sacred’ disease, which he claims to originate from the unhealthy condition of the brain. So we can take it to be quite appropriate for the author to insist in his arguments that healthy

Basel: Verlag Friedrich Reinhardt AG, 1965), pp. 181-206. Heinimann seems to have put too much weight on the differences between them.

seed comes from the healthy part, while diseased seed comes from the diseased part of the human body. The author of the treatise *Airs, Waters, Places*, on the other hand, tries to explain on the theoretical basis of the pangenetic theory how a particular kind of characteristic feature artificially formed into the human body is transmitted from parents to their children, by insisting just as the author of the treatise *On the Sacred Disease* does that health seed comes from the healthy part of the body, while diseased seed from its diseased part. The author's mention of the healthy and diseased nature of the seed seems to be out of place, because he is interested here in the hereditary transmission of particular kinds of characteristic feature from parents to their children, not specifically on that of the individual constitution prone to a particular disease. Thus, we may assume it as an indication of the fact that the author wrongly cited the relevant passage from the arguments of the other treatise.

When we turn to their psychological arguments respectively, we may have a more decisive view of their relative chronology. As one of the most remarkable achievements in modern scholarship concerning the historical development of human psychology in ancient Greek thought before Plato, I would mention the book written by D. B. Claus, who, starting with a presupposition that our psychic states and activities were originally considered to be manifestations of the soul as 'life-force', explains that rationalistic ideas of the human body, as provided by scientific medicine, were transferred into the soul by the development of an oblique analogy between the two. It is because the soul was regarded as the psychosomatic nature of a human being, amenable to therapy and doctrines, like the ones furnished by Greek medicine for the human body, he argues, that it acquired moral and personal connotations by which we may well hold it to constitute the self of a human being.[35] Thus, his arguments presuppose, characteristically, that the human body and soul as its correlative are symmetrical. However, I would rather propose, in view of psychological arguments in the two Hippocratic treatises discussed above, that Hippocratic doctors discovered that there is a kind of asymmetry existing in their correlation. I suppose that it probably led them to have an idea of a distinctive nature

[35] D. B. Claus, *Toward the Soul: An Inquiry into the Meaning of Psyche before Plato* (New Heaven and London: Yale University Press, 1981), pp.181-183. See also, pp.153-154. His study deserves noting, because, as far as I know, it may be regarded as the first attempt to refer explicitly to the contribution of medical thought to the development of ancient Greek psychology. However, I have doubt about his treatment of medical texts, because he is discussing psychological arguments of the two Hippocratic treatises *On the Sacred Disease* and *Airs, Waters, Places*, along with those of *On Regimen*, because, as he himself admits it, it is of idiosyncratic character as far as human psychology is concerned.

of the soul, which they were necessarily to understand as a distinct constituent of a human being.

In the encephalocentric model of human psychology proposed by the author of the treatise *On the Sacred Disease*, some cases of unusual psychic states such as madness and delirium are described as our subjective experiences. The author distinguishes them from abnormal changes in the physical condition of the brain as their causes. He explains that these changes take place, when the brain becomes hotter or colder, moister or drier than its nature, or when it has suffered some other affection contrary to its nature. It may follow from this that the author regards psychic states and activities of a human being as being more complex and multiform in their nature than the physical changes which he holds to occur in the human body and its parts. The author of the treatise *Airs, Waters, Places* makes a step further in his human psychology to the view that the soul may be regarded as a distinct constituent of a human being from the body. According to the author, moral characteristics of people belonging to their soul may be formed not only by natural environments but also by social ones, which he holds to function sometimes as their formative causes by themselves, independently of the former or even in opposition to them, while their physical features are almost dependent in their formation on the natural ones. He obviously holds that psychic features of a human being cannot be reduced altogether to the same formative causes as their physical ones.

Judging from their psychological arguments, I assure that the author of the treatise *Airs, Waters, Places* is of much more wide-ranging interest in human psychology, also standing on the basis of his conceptual distinction between human body and soul. So, it may be confirmed from this that the treatise *On the Sacred Disease* was written earlier than the other. It is more worth to be emphasized here that in both cases, physical and psychic aspects of a human being are understood rather asymmetrically as making up his or her two distinct constituents. In other words, Hippocratic doctors may have been required to have such asymmetric understanding of the two aspects, so that they could treat all kinds of disease in a rational or scientific way. As I have mentioned above, the authors of the two Hippocratic treatises shared the same opinion that every disease, far from being due to the intervention of divine entities, has its nature.[36] It turns out to be obvious from this opinion that Hippocratic doctors thought that every disease is a natural phenomenon that may occur in the human body defined by them as a physical constituent of a human being. Further, their definition of the human body as such

[36] See text to note 5 above.

necessarily involves requiring a different domain in a human being, which may well be regarded as constituting his or her social life.

To Conclude: Hippocratic Medicine and Human Psychology

Thus, we may legitimately come to the view that Hippocratic psychology, as we may call it, cannot be defined as one version of the so-called materialist theory of human psychology, since, as we have seen before, Hippocratic doctors regarded psychic aspects of a human being as having a distinctive nature of their own, which is to be distinguished from that of the body. I would insist that the most appropriate term to express their psychology will be non-substantial dualism rather than materialism, provided, of course, that it might not be misleading to refer to categories which are standard in modern philosophy of mind for illustrating characteristic features of ancient Greek psychology.[37]

It is particularly significant to note that Hippocratic doctors assigned moral characteristics of a human being specifically to the soul as what may be defined as his or her social attributes. The author of the treatise *On the Sacred Disease* is found to include, among various kinds of psychic states and activities which he enumerates in his arguments of chapter 14 (17), our moral and aesthetic judgments of what is good or bad, beautiful or disgraceful. The author of the treatise *Airs, Waters, Places* is much more explicit in his explanation of the formation of human character, such as courage and cowardice. The author goes so far as to introduce the concept of soul as the subject of human choice and voluntary motions, which may well be identified with the self of a human being, since indeed it is described there as being responsible specifically for moral judgments and moral actions.

This conception of the soul seems to be closely connected with their scientific view of the human body, because it was obviously defined by Hippocratic doctors as a physical constituent of a human being. They probably held the human body to be characterized as being essentially neutral in respect of moral or social evaluation of a human being, as also commonly held today. Thus, it is their scientific understanding of the human body as such that may have led them to make a clear demarcation between it and the soul, because they assumed the latter to be theoretically required to be existing as another constituent of a human being, which may well be regarded as responsible specifically for our social life.

[37] For a classification of ancient theories of psychology into relevant modern categories, see for example T. Irwin, 'Aristotle's philosophy of mind', in S. Everson (ed.), *Psychology, Companions to Ancient Thought: 2* (Cambridge: Cambridge University Press, 1991), p.57.

In conclusion, the Hippocratic treatises *On the Sacred Disease* and *Airs, Waters, Places* may well be regarded as the main texts for illuminating how much Hippocratic doctors contributed to the development of ancient Greek and Roman psychology. It is a significant fact, for example, that Hippocratic encephalocentric model of human psychology, as proposed by the author of the Treatise *On the Sacred Disease*, was to be adopted in early Hellenistic period by an Alexandrian physician, Herophilus of Chalcedon (c.330-250 BC). Herophilus is reported to have proved by his anatomical researches on the human body that the brain is the central organ of all psychic functions to be assigned to the human soul.[38] Much more remarkably, as I hope to have made it clear enough, we may judge from these two treatises that Hippocratic doctors probably made a great contribution to the historical development of the conception of soul as the self of a human being in the fifth and fourth centuries BC.

Acknowledgements

This article is partly based on the paper entitled 'The Hippocratic Tradition in Early Hellenistic Medicine', which I gave to the Research Seminar held on 4 December 2008 at the Department of Classics and Ancient History in the School of Humanities and Social Sciences, University of Exeter, UK. I stayed there for my overseas research from 23 November to 6 December 2008. I would very much appreciate Prof. Christopher Gill, Prof. John Wilkins, Prof. Barbara Borg, Prof. Daniel Ogden and other members of the Department, who kindly offered me an opportunity to give my paper to their Research Seminar, asked me valuable questions and made lots of encouraging comments. I would also be thankful to two anonymous referees of my article for checking it meticulously and giving many critical comments on it, which were very useful for me to complete its revised version to be published in *JASCA*.

Hirosaki University
masahiro@cc.hirosaki-u.ac.jp

[38] See H. von Staden, *Herophilus: the Art of Medicine in Early Alexandria* (Cambridge: Cambridge University Press, 1989), pp.247-249. When discussing early Hellenistic medicine, scholars tend to focus specifically on its innovative aspects, though its relationship with the tradition of Hippocratic medicine may probably be a topic deserving much attention as well. See on this point my article entitled 'Herophilus of Chalcedon and the Hippocratic Tradition in Early Alexandrian Medicine', *Historia Scientiarum: International Journal of the History of Science Society of Japan*, Vol.21, No.2 (Tokyo: The History of Science Society of Japan, 2011), pp.103-122. As regards Herophilus' younger contemporary, Erasistratus of Ceos (c.320-240 BC), I am now of the opinion that his encephalocentric model of the human body also stands in a line of theoretical development from the tradition of Hippocratic encephalocentrism. I will argue for it thematically in another paper to be published in the near future.