A Hippocratic Conception of the Physiology of Sexual Pleasure

I. Introduction

The present study falls within the broader context of an inquiry into Greek theories of pleasure. It is mainly Greek thinkers under our description of philosophers who have theories of pleasure. These theories often distinguish a somatic or bodily species, which principally has to do with the sensations of touch and taste. Sexual pleasures in particular are conceived as tactile pleasures.

Most Greek philosophers are quick to dismiss sexual pleasures. This is because Greek philosophical treatments of pleasure typically arise in the context of ethical discussions, and sexual pleasures are widely regarded as base, as generically animal, rather than specifically human, and so as ill-befitting human preoccupations.

This is unfortunate from the perspective of the scientific or ontological interest in understanding the nature of such pleasures. Moreover, arguably, such quick dismissals obscure fascinating complexities, indeed, complexities that may be hard to reconcile with the broader theories of pleasure in which they figure. For example, in Republic 9 Plato has Socrates identify pleasure as related to desire, itself a response to deficiency. Deficiency evokes desire, and pleasure accompanies or simply is the restoration of the deficit. This conception is relatively easy to square with the pleasures of eating when hungry and drinking when thirsty. However, it does not seem to explain sexual desire and the pleasure of the orgasm. Again, because Plato does not dwell on the nature of sexual pleasure, this problem is either unobserved or suppressed.

Evidence from which to discuss conceptions of sexual pleasure is, therefore, limited. Yet it is not non-existent. In particular, we have passages from Hippocratic and
Peripatetic writings that shed light on the question. Indeed, this body of evidence is particularly interesting because it is inconsistent and because the later Peripatetic work appears to engage and challenge the Hippocratic work. Given the complexity of the evidence, this paper will focus on the evidence from the Hippocratic corpus. Some Aristotelian and Peripatetic passages will be introduced in the process, but the paper does not attempt to provide an Aristotelian or Peripatetic conception of the physiology of sexual pleasure as well, nor to compare these with the Hippocratic conception it does provide. The discussion will begin with and focus on the Hippocratic Treatise *On Generation.*

II. The Physiology of Sexual Pleasure in *On Generation*

In the Hippocratic treatise *On Generation,* we find the following description of the physiology of sexual activity in men:

(T1) "The sperm of the man comes from all the humor in the body and is the most potent part separated [from that humor]. Justification for the claim that it is the most potent part separated is the following: Although when we have sex we emit a very small quantity, we become weak. What happens is this. Veins (φλέβες)\(^5\) and sinews (νεύρα) extend from the whole body to the penis. When these (οἱσιν) are gently rubbed and heated and filled (ὑποτριβομένουσι καὶ θερμαινομένουσι καὶ πληρευμένουσιν), a sort of friction (ὡσπέρ κινησιος) occurs, and from this (ἐκ τούτου) pleasure and heat arise in the whole body."\(^6\)
In attempting to understand the relationship between sexual pleasure and the physiological process described here, the final sentence is crucial. A satisfactory interpretation of this sentence should address at least the following four questions:

(1) The veins and sinews are said to be gently rubbed, heated, and filled. How are we to understand these events?

(2) A sort of friction is said to occur when the veins and sinews are gently rubbed, heated, and filled. What is the relation between the rubbing, heating, and filling, on the one hand, and the quasi-friction, on the other?

(3) How and why do pleasure and heat arise from the quasi-friction? And what is the relation between the pleasure and the heat?

(4) Finally, why do pleasure and heat arise in the whole body?

III. Rubbing, Heating, and Filling of the Veins and Sinews

I take the conjunctions "… καὶ … καὶ …" to imply a causal process: Rubbing causes heating, and heating causes and filling. That the rubbing in question is specifically of the penis is confirmed by the line that immediately follows (T1): "When the penis is rubbed (τριβομένου δὲ τοῦ αἴδοιου) …"7

Before we proceed to explain why rubbing causes heating, and heating filling, we should note that the relative pronoun "οἶσιν" seems to suggest that both the φλέβες and νεῦρα are rubbed, heated, and filled. However, Lonie notes that while φλέβες are hollow, νεῦρα are, with two exceptions in the Hippocratic corpus, solid.8 Thus, only the veins (φλέβες) can be filled.9 Indeed, the word "νεῦρα" occurs seven additional times among the set of treatises On Generation, On the Nature of the Child, and Diseases IV.10 In all
cases, it clearly means "sinews" rather than "veins." For instance, in *On Generation* 2.1 we learn that the operation of producing eunuchs involves cutting the seminal passage and cutting the *νευρα* between the testicles and penis. The function of the latter is to raise and lower the penis.

Given this, while the sinews may be rubbed and warmed, strictly only the *φλέβες* are rubbed, warmed, and filled. Note also, of course, that neither the veins nor the sinews are directly rubbed and heated; they are rubbed and heated through the rubbing of the skin.

That rubbing causes heat may be taken as a simple empirical fact. Nonetheless, why rubbing produces heat invites explanation. Presumably, heat itself is kinetic. Thus, rubbing, which itself requires heat, engenders or transfers heat. Compare Aristotle's statement in *Metaphysics* Z.9 where there is mention of rubbing to engender heat to balance the humors to produce health: "Thus, the heat in the movement [namely rubbing] has produced heat in the body …"

It is easy enough to find passages in the Hippocratic corpus that support this idea. For instance, in the discussion of the powers of exercise in *Regimen II* we learn that exercise, which involves movement, engenders heat. We do not, however, find any further explanation for the relation between motion and heat. We might say that explanation of this fact ends here.

(T1) continues:

(T2) "When the penis is rubbed and the person is moved (τοῦ ἀνθρώπου κινεμένου), the humor in the body becomes warm and (καὶ) it diffuses (διαχέεται), and (καὶ) it is agitated (κλονεῖται) by the movement (κινήσιος) and (καὶ) it foams
(ἀφρέει), just as all other liquids, when agitated, produce foam."^{14}

The first line of (T2) describes two events: the rubbing of the penis and the motion of the person. I understand the latter to be the thrusting and pulling of the man's body as a whole and in particular of the pelvis in sexual intercourse. The conjunctions "... καὶ ... καὶ ... καὶ ..." suggest that the heat, generated both from the rubbing of the penis and the thrusting and pulling is responsible for the diffusion of the humor, while the movement of the person (ἀνθρώπου), again the thrusting and pulling, is responsible for the agitation and foaming of the humor.

Before we proceed any further with these events, let us draw some terminological distinctions. First, it is convenient to distinguish between bodily humors in general and the particular mixture of humors that constitute the seminal fluid. I will refer to the mixture of humors that is educed into the veins that lead to the genitals as seminal fluid. Note, moreover, that I will distinguish sperm from this seminal fluid, since sperm emerges from this seminal fluid through the agitation of the latter. Furthermore, it is convenient to distinguish between the veins that lead to the genitals, which, as we will see, ultimately run from the head, and the vein-system of the genitals more specifically. I will refer to the former as seminal veins and the latter as genital veins. The genital veins are a part, the ultimate part, of the descending seminal veins. Finally, I will refer to the genital veins in males as penile, and to the genitals veins in women as hysterical (that is, ending in the uterus).

Now, there are various ways we may think of heat's responsibility for the diffusion of the seminal fluid into and through the seminal veins. One is that heat expands the various bodily humors so that they flood into the seminal veins, perhaps at different
locations of the seminal vein system, mix, and thereby form the seminal fluid. Another is that heat expands the hollows of the seminal or specifically penile veins and thus allows the seminal fluid to flow into them. A third is that the heat of rubbing the penis educes the seminal fluid into the seminal and ultimately the penile veins.

The first option differs from the second and third not only in the way it explains heat's responsibility for the diffusion of the seminal fluid, but also because only it explicitly provides an explanation of how the various bodily humors are mixed to become seminal fluid. On the other hand, I see no evidence in the text that heat expands the humors. Therefore the first option must be rejected.

Regarding the second option, consider the author's account of why children do not ejaculate or rather why there is no separation of sperm from seminal fluid in children:

(T3) "In the case of children, the little veins (φλέβεια), being narrow and congested, prevent the passage of humor, and the friction (κινησμός) does not occur similarly (to the way it does in the adult). Therefore, the humor [= mixture of humors that yield seminal fluid] in the body cannot be agitated (κλονέεται) to separate (ἀπόκρισιν) the sperm. Girls, while they are still young, do not menstruate for the same reason. But as boys and girls grow, the veins (φλέβες) that extend in the boy's case to the penis and in the girl's to the uterus, expand and widen in the process of growth; and an opening is produced, and a path and conduit is created through the narrow passages; and then the humor [= mixture of humors that yield seminal fluid] is able to be agitated (κλόνησιν ἵσχει), for there is a wide space (ἐύρυχωρίη) for it then; and because of this (ἐνθα), it will be agitated. That is why
[seminal fluid] flows (χωρεῖ) when the boy reaches puberty and the girl reaches her menses.15

(T3) suggests that in men the seminal veins are already capacious enough to admit the humors that mix into the seminal fluid from which the sperm will be separated. As such, the second interpretive option fails.16

Before considering the third option, note that while the capaciousness of the seminal veins in adults, versus children, explains why the humors can enter into them, it does not explain why, during sexual activity in particular, the humors are educed into the seminal veins.

Now for the third option: The heat generated in rubbing the penis educes the humor into the seminal and ultimately the penile veins. In fact, there is little explicit evidence for this interpretation in On Generation itself. However, it is consistent with other passages in the Hippocratic corpus, including claims in Diseases IV. In Diseases IV the head is said to be hollow and to attract phlegm like a cupping instrument.17 Generally speaking, the medical practice of cupping was common among Greek doctors. As such they recognized that heat appropriately applied to the surface of the body attracts fluid to that area.18 In a helpful note on cupping in his edition of On Ancient Medicine Schiefsky writes that the "cupping instrument is a standard example of attraction (ἐλκεῖν) in philosophical and medical literature."19 More precisely, in section 15 of On the Nature of the Bones,20 amid an account of the penile veins, we find the following description:

"When it [namely the primary vein of the penis through which the seminal fluid is conducted] is erected by the penis, it exercises pressure on the veins descending [from the spine] into the loins,21 and these, when pressure is exerted on them as if
by a cupping instrument (ὡςπερ σικύη), discharge all their contents into the penile vein above.”

In *On the Generation of Animals* Aristotle refers to the view, not his own, that "the genitals attract [seminal fluid] like cupping instruments (ἐλκειν τὰ αἰδοία … ὡςπερ τὰς σικύας).” Later in the text, Aristotle refers to the view that the uterus attracts seminal fluid "in the same way that conical vessels which have been washed out with something warm draw water up into themselves when they are turned mouth downwards." These passages strongly support the interpretation of option three: Heat generated by rubbing the penis draws humor into the seminal veins, where it mixes to become seminal fluid, and ultimately into the penile veins. Indeed, I suggest that the rubbing of the penis is the principal reason for the diffusion of the seminal fluid into the penile veins. But recall the following claim in (T2):

"When the penis is rubbed and the person is moved (τοῦ ἀνθρώπου καὶνευμένου), the humor [= mixed of humors that become seminal fluid] in the body becomes warm and (καὶ) it diffuses (διαχέεται)."

This text suggests that the diffusion of seminal fluid is a more complex process. Specifically, the movement of the person also appears to be responsible for heating, and it appears to be responsible for diffusion of the humor. Regarding heat's responsibility for the diffusion of the humor, I suggest that the author may have two ideas in mind. One is that humor becomes more fluid as it is heated. The following line at *On Generation* 4.3 encourages this possibility: "intercourse, by heating the blood renders it more fluid …" The other idea is that heat, because it dries, attracts moisture. This idea is not expressed in *On Generation*. However it occurs in the discussion of the production of heat through
exercise in *Regimen II*, which we mentioned above. In this discussion the heat produced by exercise is also said to cause desiccation. For instance, with respect to seeing, which is itself conceived as a form of exercise, a so-called natural rather than a forced form: "The soul, applying itself to what it can see, is moved (κινεῖται) and warmed (θερμαίνεται). As it warms, it dries (ξηραίνεται), because the moisture is emptied." Subsequently, in discussing the (forced) exercise of walking, the author says that because the body is heated, the flesh draws (ἐλκεῖ) moisture to it. Again, regarding the bowels: "When the bowels have been emptied, being hot, they draw to themselves the moisture from the body generally." Assuming the principles operative in this passage this may be applied to *On Generation*, our explanation for the entry of humors into the seminal veins and the diffusion of seminal fluid through the seminal veins can be elaborated as follows. The thrusting and pulling of intercourse heats the humors, thus making them more fluid and facilitating their entry into the seminal veins. Furthermore, perhaps, heating desiccates the seminal veins and thus attracts moisture into them.

Regarding this last point, it is helpful to turn back to the discussion of the seminal and penile veins in section 15 of *On the Nature of Bones*. In particular, the author of this section offers an account of the contents of the seminal vein system not during sexual activity. (Note that the author has the principal seminal vein in mind; thus he speaks in the singular.)

"A sensation of pleasure is aroused when this vein is filled with seminal fluid. But during the rest of the time it is typically filled with a little blood and with *pneuma*."
If we are entitled to assume that the author of *On Generation* believes that outside of sexual activity, the seminal veins contain some moisture, be it some blood and *pneuma* or some other moisture, then the suggestion that the heat of sexual activity, by desiccating, attracts moisture gains further credibility.²⁹

**IV. κνησμός**

The eduction of the humors into the seminal veins and then into the penile veins is followed by their agitation. The locus of the agitation of the seminal fluid itself, however, is unclear. But, as we will see below, specification of this locus is crucial for the interpretation of sexual pleasure. We learn from *On Generation* 2.2 that the vein-system that conveys the seminal fluid runs "from the head past the ears and into the spinal marrow."³⁰ Moreover, "once the [seminal fluid] has entered the spinal marrow it passes in course through the veins along the kidneys. And from the kidneys it passes via the testicles into the penis."³¹ Since the seminal veins extend from the head all the way to the penis, the agitation of the seminal fluid they carry could occur anywhere along this route as well as throughout it. On the other hand, the agitation could occur more specifically within the genital region, that is, within the penile veins. One reason to think that the seminal fluid is agitated specifically in the penile veins is the analogue of the agitation of seminal fluid in women. In women friction (*κνησμός*) is said to occur specifically in the uterus:

**(T4)** "In the case of women, I claim that during intercourse when the vagina is rubbed (*τριβομένου*) and the uterus is moved (*τῶν μητρέων κινεμένων*), friction
(κνησμός) occurs in the uterus and produces pleasure and warmth in the rest of the body."\(^{32}\)

I will argue below that the friction (κνησμός) in the uterus is precisely a function of the agitation of the seminal fluid in the uterus. As such, (T4) encourages the view that in men the agitation of the seminal fluid occurs in the penile veins. Further support for the view that this aspect of sexual physiology in females is analogous to that in males can be drawn from the parallel between the clause in (T4) "when the vagina is rubbed and the uterus is moved" and the clause in (T2) "when the penis is rubbed and the person is moved." Below I will provide further support for the view that in men the seminal fluid is agitated in the penile veins specifically rather than in the seminal veins generally.

Presently, however, let us clarify the meaning of "κνησμός" and its relation to the rubbing, heating, and filling, on the one hand, and to the agitation of the seminal fluid, on the other.

The relation between the friction (κνησμός), on the one hand, and the rubbing, heating, and filling, on the other, is unclear. Lonie writes:

"[(T1)] suggests that κνησμός is a necessary stage in the production of heat and κλώνησις [agitation]. But it is difficult to see how this could be so and, in the author's general physiological theory, heat is the direct consequence of movement. We must take into account here the author's tendency to state first the consequence that he regards as most important, or the fact [that] is uppermost in his mind. Irritation and pleasure are really by-products of the whole process, although they are inseparable from it."\(^{33}\)
In clarifying Lonie's reasoning here, let us ourselves be clear that he appears to interpret κησμός phenomenologically, as felt irritation, like pleasure. This is confirmed by his translation of "κησμός" as "irritation" and his statement: "The word κησμός … refers to the itch or irritation caused by a loss of small particles of tissue." Accordingly, Lonie suggests that (the feelings of) irritation and pleasure are "by-products of the whole process." Since, as Lonie maintains, (T1) suggests that "κησμός is a necessary stage in the production of heat and agitation," he is compelled to argue that, strictly speaking, the Hippocratic author's description is illogical or at least non-linear. Thus, Lonie writes: the author's description reflects a tendency to state "the consequence that he regards as most important."

I suggest that there are three errors in Lonie's conceptualization here. One is that "κησμός" is a by-product of the whole process. Another is that "κησμός" refers to a feeling and therefore a by-product of the process. The third is that κησμός is a "stage in the production of" both heat and agitation. Regarding the third error, there is no good evidence in On Generation that κησμός precedes or causes κλόνσις. On the contrary, I suggest that κλόνσις precedes and causes κησμός.

Regarding the second error, "κησμός" does not refer to a feeling, quale, or epiphenomenon. In the present context it refers to a physiological event; hence, my translation "friction." Moreover, "κησμός" refers to a specific physiological event and therefore, strictly, is not correlated with "the whole process." I will now defend these claims.

The noun "κησμός" comes from the verb "κναίω," which means "to scrape." Simply on etymological grounds, then, the noun could refer to the sensation of scraping,
itching, or irritation, but it could as well refer to the physical event of scraping or friction. For instance, as Lonie himself notes, the Hippocratic author of *On the Nature of the Child* refers to lead filings, used as an ingredient in a chemical experiment, as "κνήσματα." Since scraping qua physiological event generally correlates with a sensation, it is often difficult to ascertain from a given passage in the Hippocratic corpus whether the one or the other, if not both, is being referred to. For example, in *Internal Affections* the author describes the following symptoms of a pulmonary disease: "Swelling occupies the chest; the patient speaks little; redness and κνησμός settle over the body." Evidence from the Hippocratic corpus pertaining to the meaning of "κνησμός" is, then, ambiguous. On the other hand, the word "κνησμός" occurs four times in the Peripatetic corpus and in all cases in a sexual context. In the Peripatetic *Problems* "κνησμός" is twice used clearly to refer to the physical event of friction rather than the experience of irritation: "Now, the pleasure in the friction (τῆς ἤδονῆς … τῆς ἐν τῷ κνησμῷ) must arise through the whole body. The friction (κνησμός) is pleasant because …" I say that "κνησμός" is here clearly used to refer to the physical event because the author clearly distinguishes the κνησμός from the pleasant feeling that accompanies it, and he proceeds to explain why the physical event is experienced as pleasant. Similarly, in *On the Generation of Animals*, Aristotle explains why sexual pleasure is intense (ἡδονὴ σφοδρά); he claims that "the cause of this is not that the seminal fluid is drawn from the whole body, but that there is powerful friction (κνησμὸς ἱσχυρός)." If "κνησμός" here did refer to a feeling, Aristotle's explanation would be egregiously tautological.
Lonie remarks that "the word [κνησμός] … probably has a precise meaning in the theory." That is to say, it is a technical term of sexual physiology. In that case, Aristotle's use of the word encourages the interpretation of "κνησμός" in the Hippocratic author as "friction" rather than "(felt) irritation." So far so good— but the argument to this conclusion is more complicated. I suggest that by the time Aristotle wrote *On the Generation of Animals*, "κνησμός" had become a technical term in sexual physiology, but only through the influence of the Hippocratic *On Generation*. As I will argue below, in *On Generation* the Hippocratic author *adapts* the word "κνησμός," indeed with some hesitation, to the context of sexual physiology.

We have seen above, specifically in (T3), that agitation (κλόνησις) of the seminal fluid that is drawn into the penile veins in men and into the hysterical veins and uterus in women is made possible by the fact that during puberty these veins widen. (T3) explicitly states that because the seminal veins in boys are narrow and congested, seminal fluid cannot pass into and through them. Accordingly, in boys κνησμός is said not to occur similarly (οὐχ ὀμοίως) to the way it does in adults. Now, it is not obvious how κνησμός occurs in boys; the author does not elucidate this. But, regardless, it is clear that κνησμός in men occurs because the seminal and specifically penile veins are wide enough to permit entry of seminal fluid. (T3) continues with the claim that in boys the seminal fluid in the body cannot be agitated (κλονεται) to separate the sperm. The reason for this, I take it, is that the seminal veins and specifically the penile veins lack room. Thus, if per impossibile any seminal fluid were present in them, it could not move. Consequently, I suggest that κνησμός, in men, is a function of κλόνησις, that is, of the agitation of seminal fluid.
Recall, now, the statement in (T4): "... when the vagina is rubbed and the uterus is moved, a sort of friction (κινησμός) occurs in the uterus (ἐξ αὐτᾶς) ..." 42 Here the author explicitly locates the κινησμός in the uterus. This is significant, for if "κινησμός" meant "the feeling of irritation," we would expect this feeling to occur at or at least to correlate with the site of the rubbing as well. Indeed, since the rubbing of the vagina is analogous to the rubbing of the penis, 43 we might have expected the κινησμός in men to occur at the penile epidermis. Instead, the textual evidence suggests that κινησμός is caused by agitation of seminal fluid, be it in the uterus or in the penile veins.

Assuming, then, that "κινησμός" refers to the physical event of friction or quasi-friction, I suggest that agitation of the seminal fluid "scrapes" at the walls of the penile veins and uterus. The concept of a fluid, rather than a solid, scraping a solid is, indeed, peculiar. Observe, however, that when the Hippocratic author first uses "κινησμός," his precise phrase is "ώσπερ κινησμός." Accordingly, I translate the phrase as "a sort of friction." I take it that the "ώσπερ" reflects the author's recognition that the physical effect of the agitated seminal fluid splashing against the walls of the penile veins or uterus differs from the way a solid object scrapes another solid. Again, in (T4) the author uses the phrase "ώσπερ κινησμός" rather than "κινησμός" by itself.

It is on account of this interpretation of κινησμός, as an effect of κλόνησις, that I claim that κινησμός is not a function of "the whole process" of sexual activity. It precisely correlates with one aspect of this process, the friction of the agitated seminal fluid splashing against the walls of the penile veins or uterus.

I also see no reason to believe that the referent of "κινησμός" includes a feeling of irritation, the irritation experienced from the friction of the seminal fluid splashing
against the walls of the penile veins or uterus. It is not that such an inference is inconsistent with or expressly contradicted by the textual evidence; rather, no textual evidence positively encourages it. Instead, we are told in (T4) that, in the case of women, the κνησμός in the uterus "produces pleasure and heat in the rest of the body." Likewise, in (T1) we learn that, in the case of men, "from this (ἐκ τούτου), pleasure (ἡδονή) and warmth arise in the whole body." The referent of the demonstrative pronoun "τούτου" is the immediately preceding word "κνησμός," which is grammatically in the same gender and number.44

Finally, Lonie suggests that "κνησμός is a necessary stage in the production of heat" as well as and κλώνησίς. Although Lonie is wrong to suggest that κνησμός produces κλώνησίς, he is right to suggest that κνησμός produces heat. As we have just seen, in (T4) κνησμός is said to produce "pleasure and heat (θέρμη) in the rest of the body." Likewise, in (T1) it is said that from κνησμός "pleasure and heat (θέρμη) arise in the whole body."45

How then does the friction produce heat? Observe that in the Hippocratic author's account of the physiology of sexual activity at least six types of kinetic condition are distinguishable: (1) the rubbing of the penis or vagina; (2) the motion of the body as a whole, that is, the thrusting and pulling of intercourse; (3) the flow of humor into the seminal veins where it is mixed into seminal fluid, and the diffusion of the seminal fluid throughout the seminal veins, specifically into the penile veins, hysterical veins, and uterus; (4) the agitation of the seminal fluid in the penile veins and uterus; (5) the friction of the seminal fluid splashing against the walls of the penile veins and uterus as a result of the agitation; (6) the emission or ejaculation of the seminal fluid, which we have yet to
discuss. Moreover, the various kinetic conditions have various functions within this process or at least have various effects. For instance, the rubbing of the penis or vagina creates heat, which educes the seminal fluid into the penile veins and uterus. Precisely, as we have argued, the rubbing generates heat, which educes the seminal fluid, like a cupping instrument. The thrusting and pulling of the body is of course required for the rubbing of the penis and vagina, but it also effects the diffusion of the seminal fluid into the penile and hysterial veins because the heat, which causes the desiccation of the seminal veins, attracts moisture and because the heat makes the humor more fluid. Furthermore, the thrusting and pulling agitates the seminal fluid in the genital veins and uterus.

Now, we must be careful to distinguish the production of heat in these two events (the rubbing of the penis or vagina, on the one hand, and the thrusting and pulling of the body, on the other) from the production of heat in the case of the friction of the agitated seminal fluid splashing against the walls of the penile veins and uterus. Here, I think, we can do no better in explaining why this friction produces heat than simply by appealing to the principle, evoked earlier, that motion produces or transfers heat. And again, explanation appears to end here.

V. Pleasure

We have now seen more than once from (T1) that in men pleasure, as well as heat, arises from friction. Again, in (T4) we learn that in women the friction that occurs in the uterus produces pleasure as well as heat. How, then, does pleasure arise from the friction that arises from the agitation of the seminal fluid? The problem is immediately
complicated by the fact that there seem to be at least two kinds of pleasure involved in sexual activity: There is pleasure involved in sexual activity prior and posterior to ejaculation or the separation of sperm from the seminal fluid, and there is pleasure during ejaculation or the separation of sperm from the seminal fluid. Whether the difference between these pleasures is one of kind or merely one of intensity, we cannot be sure which pleasure the author has in mind. Perhaps the author has both in mind.

In considering the problem, it should be noted that the author distinguishes between the duration of pleasure and the intensity of pleasure. This is clear from the following claim: "The woman experiences much less (ἡσοῦν πολλῷ) pleasure (ἡδὲ ται) during intercourse than the man, but she experiences pleasure for a greater time (πλείονα χρόνον) than the man."46

The intensity of the pleasure that the man experiences is, subsequently, explained as follows:

(T5) "The reason that the man experiences more pleasure (μάλλον ἡδὲ ται) is that the separation (ἀποκρίνε ται) [of the sperm] from the humor [= seminal fluid] in his case occurs suddenly (ἐξαπίνης) and as the result of a more violent disturbance (ἀπὸ ταραξὴς ἵχυντέρης) than in the woman's case."47

(T5) suggests that the pleasure the man experiences is the pleasure of ejaculation or the separation of sperm from the seminal fluid. Accordingly, the man's pleasure must follow the friction produced by the agitation of the seminal fluid. Indeed, the agitation of the seminal fluid must produce the foam (= sperm) that is at once ejaculated.

At this point, to be precise, we should distinguish between the separation of the sperm from the agitated seminal fluid and the ejaculation of the sperm from the penile
veins or uterus. If the latter occurs, it follows the former, but the latter does not necessarily occur. Specifically, as the following passage indicates, ejaculation of the sperm from the uterus typically does not occur in women:

"A woman also emits something from her body, sometimes into the uterus, which then becomes moist, \(^{48}\) and sometimes externally as well, if the uterus is open wider than normal."\(^{49}\)

Granted this, we can restate our previous point about (T5) as follows. (T5) suggests that the pleasure the man experiences is the pleasure of ejaculation. But it is not immediately clear whether the pleasure of ejaculation derives from the separation of the sperm from the agitated seminal fluid or from the ejaculation of the sperm from the penis, or both.

Let us now turn to sexual pleasure specifically in women:

(T6) "(i) Once intercourse has begun, she experiences pleasure through the whole time, until the man ejaculates. (ii) If her desire for intercourse is excited, she [emits sperm (internally or externally)] before the man, and for the remainder of the time she does not feel pleasure to the same extent. But if she is not in a state of excitement, then her pleasure terminates along with that of the man. (iii) What happens is this: If into boiling water you pour another quantity of water which is cold, the water stops boiling. In the same way, the man's sperm arriving in the uterus extinguishes both the heat and the pleasure of the woman. Both the pleasure and the heat reach their peak with the arrival of the [man's] sperm in the uterus, and then they cease. If, for example, you pour wine on a flame, first of all the flame flares up and increases for a short period when you pour the wine on,
then it dies away. In the same way the woman's heat flares up in response to the man's sperm, and then dies away.\(^{50}\)

I have divided the passage with Roman numerals to facilitate exegesis. The first point to notice, from (i), is that the woman is said to experience pleasure throughout intercourse. I take this to imply that part of the pleasure the woman experiences during intercourse does not entail ejaculation or separation of sperm from seminal fluid. This suggestion is explicitly confirmed by the claim in (ii) that after separation of sperm the woman may still experience some pleasure—although not to the same extent as during separation of sperm.\(^{51}\)

The author's admission of sexual pleasure prior to and post separation of sperm is significant precisely because it cannot be explained in terms of the separation of sperm from the agitated seminal fluid or from the ejaculation of this foam. On the other hand, I see no evidence in On Generation that explains the woman's pleasure in this case. Likewise, the text does not explain any pleasure prior to the separation of sperm, which the author would, at least on the basis of common experience, have to attribute to men.

Although the author does not provide an explanation for such sexual pleasure, some light might be thrown on this problem by the Hippocratic treatise On the Use of Liquids. In section 2 of this text we learn that certain parts of the body are naturally colder than others. Two distinct reasons are given for this: the distance of the part from the internal heat at the core of the body and the relative proximity of the part to the ground. The genitals satisfy both conditions. Thus, with regard to the first reason, the author writes: "For this reason heat produces pleasures (ἡδοναί) and titillation (προκλήσεις) in the genitals, while cold produces pains (ἀλγηδόνες) and displeasures
And with regard to the second reason, the author writes: "The genitals are by nature cooler than one thinks, for heat rises, it does not descend. For this reason, heat [in this region] is pleasurable (ἡδεταί)." These passages suggest an explanation for sexual pleasure outside of ejaculation and separation of sperm on the grounds that certain rubbing of the genitals produces heat in the genital area and educes seminal fluid from above.

Although, of course, we cannot be sure that the author of On Generation would accept the explanation of such sexual pleasure in On the Use of Liquids, the author of On Generation clearly does correlate heat in the genitals with pleasure.

Consider also the account sexual pleasure in section 15.4 of On the Nature of Bones. Here the author is describing the vein-system of the genitals and specifically the primary vein through which seminal fluid is ejaculated:

"Pleasure is aroused when this vein is filled with seminal fluid. For [this vein] is typically filled with a little blood and pneuma. But when it is filled and it is heated (θερμαῖνομένης) and the seminal fluid flows down it, it grasps its contents tightly. And the pneuma within it and the pressure and the heat (θερμότης) and the tension (ξυντονίη) of the veins from all directions produce a tickling sensation (γαργαλίσμων)."52

The author of On the Nature of Bones clearly recognizes heat as a factor in the production of sexual pleasure—although, significantly, the author identifies a number of other factors that are involved in the production of γαργαλισμός.

In On Generation the correlation of heat and pleasure is most explicit in the longest section of passage (iii) in (T6), specifically the claim that in women both "the
pleasure and the heat reach their peak with the arrival of the [man's] sperm in the uterus." The author proceeds to analogize this event with the interaction of wine poured onto a fire. The uterus, like a fire, is already warm and so pleasant. The male sperm, like wine, poured into the uterus further enflames the uterus, temporarily before cooling it. This account suggests that the difference between extra-orgasmic sexual pleasure and orgasmic pleasure is a matter of intensity and that differences of intensity correspond to differences of heat.

Given this, although there is no explicit statement in On Generation that men experience sexual pleasure prior to ejaculation, it is reasonable to infer that the author would admit this fact. More precisely, the author would explain sexual pleasure preceding ejaculation as of increasing heat produced by increasing agitation of the seminal fluid and culminating in the production of foam and its ejaculation. In conceptualizing the process, the author also clearly has the heating and boiling of water in mind as an analogue. This is clear from the first of the two analogies in (iii), namely the boiling water. But recall also the line in (T2): "[the seminal fluid], just as all other liquids, when agitated, produce foam." Consider also the Hippocratic author's account of the Scythian's production of butter in Diseases IV: "[The Scythians] pour [mare's milk] into wooden bowels and agitate it. When it is agitated, it becomes foamy and separates; and the fatty part, which they call butter, being light, is separated and rises to the surface."53

Finally, as we mentioned earlier, the agitation of the seminal fluid in men and women is said not only to produce pleasure and heat, but to produce pleasure and heat throughout the body. Accounting for this is significant specifically because other ancient
theorists referred to the ubiquity of sexual pleasure in the body in defense of the theory of *panspermia*, that is, the theory that seminal fluid is derived from all parts of the body.

Indeed, one might interpret *On Generation* as committed to the view that the ubiquity of the heat and pleasure generated by sexual activity is due to the derivation of seminal fluid from all parts of the body. We have, at least, seen that the seminal veins run all the way from the head to the penis and uterus. Moreover, as we have also seen, *On Generation* explicitly endorses the panspermatic theory. Indeed, I suspect that in antiquity *On Generation* was interpreted as explaining the ubiquity of sexual pleasure on the grounds of the panspermatic theory.

That said, I see no compelling evidence from *On Generation* itself that the author actually was committed to the view that the ubiquity of sexual pleasure is a function of the panspermatic theory. This is precisely because the pleasure and heat that are said to arise in the rest of the body are said to result from the agitation of the seminal fluid. But the seminal fluid is agitated locally, in the genital area.

Instead, I suggest that pleasure and heat are said to arise throughout the body because the intensity of the heat produced by the agitation of the seminal fluid in sex radiates outward and especially upward. Admittedly, the author of *On Generation* does not say this. My suggestion is based on the explicit claims in *On the Use of Liquids* discussed above. But insofar as my use of *On the Use of Liquids* previously was not merely consistent with, but supported by *On Generation*, I believe I am warranted in appealing to *On the Use of Liquids* here. At the same time, I emphasize that, because the author of *On Generation* does not explicitly explain the ubiquity of sexual pleasure as a function of the panspermatic theory— although he maintains the panspermatic theory and
recognizes that sexual pleasure pervades the body — it is easy to understand why this explanation of the ubiquity of sexual pleasure would have been misattributed to him.

VI. A Hippocratic Conception of the Physiology of Sexual Pleasure

Our examination of the theory of the physiology of sexual activity and pleasure in the Hippocratic On Generation began with four questions: What are the processes of the veins and sinews being gently rubbed, heated, and filled? What is the relation between the rubbing, heating, and filling of the veins, on the one hand, and the quasi-friction (κανησμός), on the other? How and why do pleasure and heat arise from the quasi-friction? And what is the relation between the pleasure and the heat? Finally, why do pleasure and heat arise in the whole body?

We have answered these questions as follows. In puberty the seminal veins widen. This facilitates the flow of humors into them. This flow originates in the head and terminates in the penile veins in men and in the uterus in women. The entry of humor into the seminal veins seems to result from several factors. Principally, it results from the rubbing of the penis or vagina, which generates heat and draws the humor like a cupping instrument toward the penis and vagina. In addition, heat, which is also generated by the thrusting and pulling of sexual activity generally, may desiccate the seminal veins and thus attract moisture. Still further, heat makes the humors more fluid and thus facilitates their flow into and through the seminal veins. By the time the humors enter the penile veins or uterus, they have become mixed and thus have become seminal fluid properly speaking. The movement of the body in sexual intercourse generally agitates the seminal fluid. The widening of the penile veins proper and uterus in puberty also enables this
agitation of the seminal fluid. As the fluid is agitated, it produces friction (κινήσιμος) by splashing against the walls of the penile veins proper and uterus. This friction itself produces heat. Moreover, the seminal fluid continues to be heated by the movement of sexual activity generally. Pleasure experienced in sexual activity seems to be a function of the heat in the genitals, which, typically, are cooler parts of the body because they are relatively distant from the core heat of the body and relatively proximate to the ground. Pleasure peaks when the seminal fluid is agitated and thus heated to the point that a foam, namely sperm, is produced, precisely educed, from the seminal fluid. The production of this foam is, in fact, the separation of the "most potent part" of the seminal fluid. In men the sperm is at once ejaculated from the penis. In women, it may either be emitted into the uterus or, if the passage of the vagina is wide enough, ejaculated from the body. The heat generated by the agitation of the seminal fluid and in particular the heat generated by the powerful force of the separation of the sperm from the seminal fluid and its emission or ejaculation radiates and thus radiates pleasure throughout the body.

Two final points—first, although the Hippocratic author correlates sexual pleasure with heat generated in a particular way, the author does not consider and provides no explanation of the problem, in modern philosophy of mind, of the relation between physical events in the body, on the one hand, and sensations of those events, which may be perceptions of those events, on the other. In other words, the problem of qualia, in one of its guises, is not a problem that engages the Hippocratic author. This fact deserves mention precisely because one of the putative attractions of a physiological theory of pleasure is that it might cast light on the qualia problem. Not only is this problem non-existent in On Generation, there is not even a discussion of the physiology
of perception of the kinetic conditions and heat that correspond to the pleasure. In short, the Hippocratic author explains sexual pleasure in terms the physiology of sexual activity, but his explanation does not extend into the modern qualia problem.

Second, it should not be inferred from the preceding discussion that the author of *On Generation* is committed to the view that pleasure is bodily heat or even that sexual pleasure is bodily heat and that more bodily heat yields more sexual pleasure. If the author did believe that, he would be inclined to hold a torch to his genitals. Rather, the author correlates sexual pleasure with bodily heat *generated in a particular way*. Moreover, if it may be assumed that the author believes that ejaculation or separation of sperm is the peak of sexual pleasure, then we may add that the author correlates sexual pleasure with bodily heat generated in a particular way *and to a particular extent*.

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1 For example, "Temperance and profligacy have to do with those two senses whose objects are alone felt by and give pleasure and pain to brutes as well; and these are the pleasures of taste and touch, the brutes seeming insensible to the pleasures of practically all the other senses alike …" (Aristot. *EE* 1230b-1231a) "Why are men called incontinent if they indulge to excess in the pleasures connected with touch and taste? … Being shared by the animals, then, they are held in least honor and so are regarded as the only pleasures deserving of reproach, or at any rate more so than any others. So we blame a man who is a slave to them and call him incontinent and intemperate because he is a slave to the worst pleasures. Now the senses being five in number, the other animals find pleasure only in the two already mentioned; in the others they find no pleasure, or, if they do, it is only incidentally. For the lion rejoices when he sees or scents his prey because he is going to enjoy it; and when he has satisfied his hunger, such things do not please him,
just as the smell of dried fish gives us no pleasure when we have eaten our fill of it, though, when we wanted to partake of it, it was pleasant." ([Aristot.] Prob. 949b-950a)


3 \( \pi \epsilon \rho i \ ' \gamma o v \eta x \) is Latinized as "De Semine" and sometimes Anglicized as "On Seed" or "On Sperm." But the content of the treatise is broader as "On Generation" or "On Reproduction" suggests.

4 Throughout I assume the widely accepted view that the author of On Generation, On the Nature of the Child, and Diseases IV is one and the same person, presumably Polybus. Also, I follow Lonie (1981) 71 in assuming that On Generation was composed in the last decades of the fifth century.

5 The common translation of "\( \phi \lambda \epsilon \psi \)" as "vein" is misleading insofar as the Greeks of this period had not distinguished veins from arteries. Indeed, it is not always the case that
"φλέψ" refers to veins or arteries. I retain the standard translation; however, "φλέψ" actually and merely refers to tubular conduits in the body that convey humors and pneuma.


7 1.2

8 "νευρα are variously tendons, ligaments, nerves, and even muscles: in view of the vague anatomy of the Hippocratic Collection it is often difficult to decide which." (1981) 105. The two passages Lonie cites (n.40) in which νευρα are referred to as hollow are de arte 10.16.8 and lique. 2.87.4, Lonie notes that Erotian (voc. Hipp. coll. N 7) glosses the latter as φλέψ.

9 Compare the discussion in the Peripatetic Problems of why sex is pleasant. The author considers whether "sex is pleasant because the semen comes … only through that sort of part to which the passages of the veins (οἱ πόροι τῶν φλεβ̣ων) lead [that is, the penis]." (Prob. 878b)

10 2.1 (bis); 17.2; 19.2, 3; 52.3 (bis).

11 See 1032b: "… in the case of [the production of health, the process] might begin from the warming, which he would produce by rubbing."

12 1034a.

13 61-63.

14 2.1; Lonie invites comparison with Morb. IV 51.2. He also notes that Diogenes of Apollonia (DK 64 A 24, B6) called sperm a foam (ἄφρος) of blood and derived the word ἀφροδίσια (sexual intercourse) from it. (1981, 106)
15 1.2-3. See also De nat. puer. 20.

16 It should be noted, however, that in his discussion of lactation in de nat. puer. 21, the author compares the way the mammary veins widen in suckling to "the case of a man who enjoys sexual intercourse frequently: the veins becomes larger, thereby inducing him to further intercourse." In the latter case, however, the cause of the widening would appear to be the fact that the penile veins become stretched out as a result of frequent sexual activity.

17 35.2. Compare also Morb. I 15, where the head, because heated, is said to attract the finest part of the phlegm in the body. Cp. also Morb. I 29.


19 (2005) 332. For some discussion of cupping instruments, including photographs, see John Stewart Milne, Surgical Instruments in Greek and Roman Times, Oxford, 1907, 101-5 and plates XXXIII-VII.

20 On the disunity of the treatise and the idea that sections 11-19 originally belonged to an independent treatise On Veins, see Marie-Paule Duminil, Hippocrate, tome VIII, Paris, 1998, 79-89.

21 Duminil translates: "il presse fortement les petits vaisseaux qui descendent dans le colonne vertébrale et ceux-ci, presses sur eux-mêmes comme par une ventouse, se vident
de tout leur contenu dans le vaisseau qui est au-dessus." (153) Duminil notes that "les petits vaisseaux sont ceux du c. 14.2 [namely the close-set little veins that form a plexus around the vertebrae and extend into the spinal marrow.]" (n.87, p.236, with C. R. S. Harris, The Heart and the Vascular System in Ancient Greek Medicine, Clarendon Press, 1973, 66)

22 15.3. See Harris (1973) 68.

23 GA 737b. I owe this reference to Schiefsky (2005) 332-3. Aristotle attributes this view vaguely to some people (τινές). Schiefsky suggests that Aristotle might have had On Ancient Medicine in mind, but the passage from On the Nature of Bones just cited seems to be a more likely source. Indeed, Schiefsky acknowledges that "the context indicates that the thinkers to whom [Aristotle] refers also gave an important role to 

\[\pi\nu\epsilon\iota\mu\alpha.\]" (333) This is consistent with de oss.


25 61. Likewise, hearing and thinking are said to involve motion, which causes heating which causes drying.

26 62.

27 62.

28 15.2


30 2.2.

31 1.3. Compare the account in De oss. 14-15. Note also that the Hippocratic author of De sem. is explicit that the urinary tract is distinct from the seminal vein of the penis.
4.1.

106.

106.

17.4; Lonie (1981) 106.

7.9. Compare 36.10 as well as *fract.* 7.2, 27.9; *morb.* 2.50.2.

*GA* 723b; *prob.* 878b (bis); *HA* 578b.

878b.

724a.

The claim that they are congested (*πλευρούμενα*) also supports the hypothesis made earlier that, outside of sex, they are filled with some other humor or substance.

The phrase "οὐχ ὀμοίως" indicates that the author is being careful here. Evidently, he does not want to deny that some sort of sexual stimulation occurs in boys. However, he wants to distinguish this from that of adults. Presumably, the *κηρσμός* that children experience is limited to the warmth that rubbing the penis or vagina engenders. In the case of girls and women, the Hippocratic author does not distinguish the clitoris. However, Aristotle significantly does.

Cp. Aristotle: "An indication that the female emits no semen is actually afforded by the fact in intercourse the pleasure is produced in the same place as in the male by contact, yet this is not the place from which the liquid is emitted …" (*GA* 728a; and cp. 739b)

Alternatively "τούτου" is neuter and so refers to the set of preceding events, including rubbing, heating, and filling. But the parallel with sexual physiology in women encourages the interpretation I suggest.
In considering how κνήσμος produces heat, let me also clarify why in (T1) we find the phrase "τῷ σωματὶ παντὶ" whereas in (T4) we find the phrase "τῷ ἄλλῳ σώματι." In (T1) we have just been told that the penile veins extend to the penis from the whole body (ἀπὸ τοῦ σώματος). Since, as we have now come to see, agitation of the seminal fluid in men occurs in these penile veins, the friction of the seminal fluid occurs throughout the body. In contrast, in women, the agitation of the seminal fluid is specifically located in the uterus. Thus, insofar as the heat and pleasure produced by the friction of the seminal fluid against the walls of the uterus affects the body more generally, it affects the "rest of the body," that is, the body beyond the uterus.

The claim that the woman's emission of her own sperm into the uterus makes the uterus moist is puzzling insofar as the seminal fluid, which is agitated in the uterus, would already make the uterus moist.

This point is itself further confirmed by the following line that distinguishes this mild pleasure following separation of sperm from the termination of pleasure after the separation of sperm.