

Harkening to Hippocrates: Anatomical Reception and Commentary in Early Modern Castile

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Abstract: *Medical humanism in the sixteenth century largely focused on reconstructing and interpreting the sources of the past. Examining and elucidating works from the Hippocratic and Galenic corpora through the practice of commentary was a popular means of connecting with ancient authors and advancing both medical practice and theory in the early modern era. My research intends to explore this process by analyzing the work of the Castilian physician and medical author, Lázaro de Soto. This paper will focus on a section of his commentary on the Hippocratic text *De locis in homine*, which discusses the sutures of the cranium. I will consider the cultural and intellectual climate in which de Soto worked and how this effected his interpretation of this text and the sources cited. By reviewing the original text itself, de Soto's views on this anatomical issue and the other sources used by the author to justify his position, I hope to extrapolate a clearer picture of how the texts of ancient physicians were utilised by their early modern counterparts.*

Medical humanism in the sixteenth century largely focused on reconstructing and interpreting the sources of antiquity; examining and elucidating works from the Hippocratic and Galenic corpora through the practice of commentary acted as a popular means of connecting with the ancient authors and advancing medical practice

and theory in the early modern era. This paper intends to explore this connection between antiquity and the Renaissance by analysing the work of the Castilian physician and medical author, Lázaro de Soto, focusing on a passage of his commentary on the Hippocratic text, *De locis in homine*, which discusses cranial sutures, and tracing the history of ideas related to these joints.

This examination should begin with some biographical information on the early modern commentator of this work, Lázaro de Soto, a physician who spent much of his early life in the Castilian city of Valladolid, having both been born there and having attended the local university.¹ In 1560, he received his *Grado de Licenciado* and worked locally as a physician until he gained employment in the Royal Court of Philip II in 1571 as a *medico de camara*.² It was during his time in the employment of the court that de Soto wrote his medical commentaries over the Hippocratic texts of *De locis in homine*, *De medicamento expurganti*, *De usu veratri* and *De dieta*, which were compiled together with his text *Animadversiones medicinae practicae* in 1594 under the title *Tomus Primus Commentariorum in Hippocratis libros*.³ Contrary to what is suggested by the title of this compilation, no other volumes of commentaries were published by de Soto.

De Soto studied and practiced medicine during the height of anatomical revival in early modern Spain. José María López Piñero follows the rise of anatomical study through dissection in the Iberian Peninsula in his work "The

¹ José Ignacio Blanco Pérez, *Humanistas médicos en el renacimiento Vallisoletano* (Burgos: Universidad de Burgos, 1999) 70; Amalia Prieto Cantero, *Bachilleres médicos graduados en la Universidad de Valladolid (1546-1870)* (Valladolid: Universidad de Valladolid, 1974), 183.

² Mariano Alcocer y Martínez, *Historia de la universidad de Valladolid. Bio-bibliografía de medicos notables* (Valladolid: Imprenta Castellana, 1931) 299; José María López Piñero, et al., *Diccionario histórico de la ciencia moderna en España* (Barcelona: Península, 1983), 388; María Teresa Santander Rodríguez, *Hipócrates en España (siglo XVI)* (Madrid: Dirección General de Archivos y Bibliotecas, 1971), 125; Nicolás Antonio, *Bibliotheca Hispana Nova*, Vol. 2 (Madrid: J. de Ibarra, 1778), 12; Blanco Pérez, *Humanistas*, 203.

³ *Animadversiones medicinae practice*, *De locis in homine*, and *De dieta* were published separately in 1585, 1591 and 1594, respectively. See Antonio Hernández Moréjon, *Historia Bibliográfica de la Medicina Española*, Vol. 3 (Madrid: Imprenta la Viuda de Jordan e Hijos, 1843), 363 for more details.

Vesalian Movement in Sixteenth-Century Spain". Within this article, López Piñero traces the establishment of anatomical dissection in the University of Montpellier in 1340, and its gradual spread during the fifteenth century throughout the universities of the kingdom of Aragon.⁴ However, this practice did not take hold in de Soto's native Castile until the mid-sixteenth century; López Piñero explains that

until the middle of the sixteenth century there is no evidence that autopsies on human corpses were carried out in a regular fashion either at the great universities of Salamanca, Valladolid and Alcalá or at the hospitals as important as those of Guadalupe.⁵

He goes on to note that, whilst the University of Valladolid was the first Castilian institution to hold an anatomy in 1551, this was not a regular practice until the seventeenth century.⁶ It is with this information, that the forthcoming commentary should be examined.

The passage commented on by de Soto comes from the Hippocratic text, *De locis in homine*, a diverse text encompassing anatomy, physiology, pathology and nosology, as well as more philosophical sections discussing subjects such as medical knowledge in relation to luck and medical education. As stated above, this short passage discusses the cranial sutures, their number, and their placement. The Hippocratic author stated that the number can vary between three and four; either "one on each side and by the ears and another in front" if there are three, or "by the ears on each side, another at the front and another at the back of the head" if there are four.⁷ This passage closed with the author asserting that more sutures will lead to a healthier disposition of the head, however, this is not elaborated upon. Elizabeth

⁴ José María López Piñero, "The Vesalian Movement in Sixteenth-Century Spain", *Journal of the History of Biology* 12, no. 1 (1979): 47.

⁵ López Piñero, "Vesalian", 47.

⁶ López Piñero, "Vesalian", 77.

⁷ Hippocrates, *Places in Man*, ed. and trans. Elizabeth Craik (Oxford: Clarendon Press, 1998), 6.1: αἱ κεφαλᾷ ῥαφᾶς ἔχουσιν, αἱ μὲν τρεῖς, αἱ δὲ τέσσεπρας. αἱ μὲν τέσσερας ἔχουσαι, κατὰ τὰ ὦτα ἐκατέρωθεν ῥαφή, ἄλλη ἔμπροσθεν, ἄλλη ἐξόπισθεν τῆς κεφαλῆς, οὕτω μὲν ἢ τὰς τέσσερας ἔχουσα.

Craik tells us in the introduction to her critical edition that this is a didactic text, likely written by an experienced practitioner for students of medicine, who already possessed foundational knowledge.⁸ This assumed level of knowledge would explain the author's lack of in-depth exposition.

Within this passage are two main ideas that caused controversy throughout antiquity, eventually being discussed by de Soto in 1594. The first pertains to the number of cranial sutures on the human skull. Prior to the revival of autopsy in the medieval era, physicians were limited in their ability to examine the interior of the human body. Anatomical knowledge was supplemented by the dissection of animals, knowledge gathered through viewing wounds and surgery, and the examination of osteological remains, amongst other indirect means. Due to this, the enumeration of the cranial sutures was a more contentious issue in antiquity. Secondly, the author broached the issue of how variations of the cranial sutures affect the health of the head, and indirectly, raised the question of what purposes the cranial sutures actually serve.

Debate on the number and placement of cranial sutures can be seen within the Hippocratic Corpus itself. Craik states that the Hippocratic author's enumeration of the sutures may be intended as a polemic against the author of another Hippocratic text, *De capitis vulneribus*, who stated that the placement of the sutures "may be in the form of the letter chi, X."⁹ This differs from our author's lambda (Λ)- and eta (Η)-shaped configurations in *De locis in homine*, demonstrating discourse between the authors of Hippocratic texts.

⁸ Hippocrates, *Places*, 18.

⁹ Hippocrates, *Places*, 121. The author of *De capitis vulneribus* is careful to note that the arrangement of cranial sutures varies and describes scenarios in which the format can be in the shape of a T or H depending on the positioning of the cranial prominence. See Hippocrates, *De capitis vulneribus*, ed. and trans. Maury Hanson, *Corpus Medicorum Graecorum* I, 4.1 (Berlin: Akademie Verlag, 1999), 63.

Literary authors debated the matter as well. In his *Histories*, Herodotus described a cranium found on the battlefield of Platea that had no cranial sutures whatsoever.¹⁰ As will be seen later in a passage from Cornelius Celsus and his work, *De medicina*, this story was later perpetuated in other medical texts. While Herodotus' account may seem fantastic, in his translation of the text Alfred Godley notes that, due to continued ossification throughout the life of an individual, sutures can become far harder to identify with age, although it is impossible to know if Herodotus had even witnessed such a thing first hand.¹¹ Due to factors such as these, the legitimacy of this account should still be considered with some scrutiny.

Plato, too, considered cranial sutures in his *Timaeus*, whereupon he argued that “the seams had all kinds of shapes owing to the force of the soul’s revolutions and of her food, being more in number when these are more in conflict with one another, and less when they are less in conflict.”¹² In other words, according to Plato the number of cranial sutures depended on how well the immortal soul, which resides within the head, had been nourished during development. As the degree of nourishment could vary greatly from individual to individual, so too could the placement of the cranial sutures. Though a student of Plato, Aristotle did not agree with this hypothesis, and stated that the number of cranial sutures was an issue of gender. Since the brain was cool by nature, the rising heat from the heart generated a large amount of steam once it had reached the cranium. According to Aristotle, because men had larger brains than women, the heads of men would generate more steam, thus needing more sutures; namely, three in comparison to the one cranial

¹⁰ Herodotus, *The Histories*, trans. George Rawlinson (London: J. M. Dent and Sons, 1992), 9.83 (706).

¹¹ Herodotus, *Histories*, trans. Alfred Godley, Loeb Classical Library IV (Cambridge, Mass.: Harvard University Press, 1947), 9.83 (258-259).

¹² Plato, *Timaeus*, ed. and trans. by R. G. Bury, Loeb Classical Library 9 (Cambridge, Mass.: Harvard University Press, 1929), 76.a-b (201): τὸ δὲ τῶν ῥαφῶν παντοδαπὸν εἶδος γέγocε διὰ τὴν τῶν περιόδων δύναμιν καὶ τῆς τροφῆς, ἥττον δὲ ἐλάττους.

suture required on the female skull.¹³ It should be noted, however, that the primary focus of these texts was philosophical rather than medical or anatomical.

As mentioned above, the medical writer Celsus also reported an account of a suture-less skull in his *De medicina*. However, according to Celsus, “it is rare for the skull to be solid without sutures; in hot countries, however, this is more easily found.”¹⁴ By this logic, Celsus may have tried to attribute Herodotus’ suture-less skull to one of the fallen Persians at the Battle of Plataea. Celsus then described various configurations for the sutures, but stops short of giving a “usual” arrangement, stating that “there is no certainty as to the number, or even as to the position of the sutures.”¹⁵ Moreover, he stated that the number of cranial sutures on the skull was directly relevant to the health of the head, writing “as for the rest, the fewer the sutures, the better for the heads.” For Celsus, the suture-less head was ideal for health, being more solid and stable, whereas too many sutures could cause weakness and ill-health.

The last author that will be consulted in exploring these questions is Galen and his *De usu partium*, in which he summarized the purposes of the sutures:

I have said above that the sutures were constructed to be of service in the transpiration of the fuliginous residues, for the attachment of the thick membrane to the bone of the head, for the transference of vessels, some passing inward and some outward, and for the formation of the pericranium.¹⁶

¹³ Aristotle, *On the Parts of Animals*, trans. James Lennox (Oxford: Oxford University Press, 2001), 2.7.653a.33-653.b.2 (30). Aristotle also notes within this passage that this variation of sutures between males and females happens only in humans rather than any “other blooded animals.” Moreover, the notion that variations of cranial sutures is dependent on gender is not unique to Aristotle. In a fragment from Vindicianus, it is shown that Herophilus and Synanchus wrote that the skulls of women have a suture which travels the circumference of the cranium, a configuration not found in the skulls of men. See Heinrich von Staden ed. and trans., *Herophilus: The Art of Medicine in Early Alexandria* (Cambridge: Cambridge University Press, 1989) 75 (195).

¹⁴ Celsus, *De medicina*, trans. W. G. Spencer, Loeb Classical Library III (Cambridge, Mass.: Harvard University Press, 1938) 8.1 (475): *Rara autem calvaria solida sine suturis est; locis tamen aestuosis facilius invenitur.*

¹⁵ Celsus, 8.1 (475): *neque enim certus earum numerus est, sicut ne locis quidem.*

¹⁶ Galen, *De usu partium*, vol. 1, trans. Margaret Tallmadge May, Cornell Publications in the History of Science (Ithaca: Cornell University Press, 1968), 9.17 (458)

Adding to these Galen wrote, in agreement with Celsus, that a further purpose of the cranial sutures was to stop the spread of fractures.¹⁷ Galen then enumerated his proposed arrangements of the cranial sutures. In this summary, familiar trends are seen in his comparison of the differing configurations to letters of the Greek alphabet, listing patterns in the shapes of an eta (H), chi (X) and tau (T). In his description, there is a reference to *De capitis vulneribus*, in which Galen discussed the arrangements of the cranial sutures in relation to the location of the cranial prominence.¹⁸ Galen ended his discussion of the sutures by considering a variety of sutures known as squamous agglutinations. These, Galen wrote, should not be counted among sutures

because the apposed bones have been gradually fined down to thin plates without depth, because the bone coming down from above is placed on the inside and the bone coming up from below lies upon it on the outside, and because they do not in this region fit into each other as sutures do.¹⁹

In other words, cranial seams that do not “fit into each other” cannot be counted amongst the cranial sutures. A similar distinction will be seen in the discussion of de Soto’s text.

It is necessary to understand the preceding authors in order to study de Soto's exegesis on the subject of the cranial sutures in *De locis in homine*. In the beginning of his commentary, de Soto asserted that “the sutures of the head are not constructed uselessly,” a sentiment which suggests a teleological inclination to his understanding of anatomy.²⁰ For de Soto, there are four purposes for the cranial sutures: first, the sutures are in place “so that the *crassa meninx* of the cranial bone is held suitably

¹⁷ Galen, 9.17 (458).

¹⁸ Galen, 9.17 (459).

¹⁹ Galen, 9.17 (460).

²⁰ Lázaro de Soto, *Tomus primus commentationum in Hippocratis libros* (Madrid: Luis Sanchez, 1594) 15: *Non inutiliter suturae capitis constructae sunt*. For more information regarding Galen's teleology and its reception in the early modern era, see Nancy Siraisi, "Vesalius and the Reading of Galen's Teleology", *Renaissance Quarterly* 50, no. 1 (Spring, 1997), 1-37.

fast.”²¹ In other words, the cranial sutures act as an anchor for the membrane now known as the *dura mater*. Secondly, de Soto wrote that the cranial sutures hold their place “so that some vessels emerge on the inside and some on the outside and are sent across for the generation of the pericranium (from the *dura mater*).”²² These purposes of the sutures are listed in Galen’s account of the cranial sutures in book 9 of his *De usu partium*. This teleological line of thinking, though not held in all of de Soto’s anatomical commentary, is one example of how “pagan” medical authors and their anatomy came to be accepted in de Soto’s Counter-Reformational world. Galen’s emphasis that the bodies had been created with purpose in mind coincided with Christian notions of a divine creator and intelligent design. Furthermore, this idea was also held with the moralization of human dissection or the assertion that by studying the human body, one was studying divine creation, and, when considered in relation to *Genesis*, studying the image of God himself.²³

This idea of a teleologically driven body continued as de Soto stated that the cranial sutures are located at the top of the head to act as a means of ventilation for the skull; he wrote that “serious illnesses and pains of the head are accustomed to arise from the retention of excrements full of soot.”²⁴ This idea, similar to Aristotle’s view, stemmed from the notion that the head and cranial sutures acted as a sort of chimney to release heat, smoke and steam generated within the body. It is on this point that de Soto explicitly disagreed with Celsus, asserting that “those who have more sutures are

²¹ de Soto, 15: *Ut crassa meninx ossi capitis commode alligetur.*

²² de Soto, 15: *Ut vasa alia intro, alia extra excidant, et transmittantur, et ad pericranei (ex dura mater) generationem.*

²³ Further discussion of this idea is beyond the scope of this paper, see Andrew Cunningham, *The Anatomical Renaissance: The Resurrection of the Anatomical Projects of the Ancients* (Aldershot: Scholar Press, 1997) for more information.

²⁴ de Soto, 15: *Namque non leves solent oriri morbi et dolores capitis ex fuliginosorum excrementorum retentione.*

healthier in the head.”²⁵ This dispute stems from a difference of opinion concerning the primary function of the cranial sutures. In de Soto’s view, the most important job of the cranial sutures was clearing the head of sooty excrements, whereas Celsus believed protecting the head from external injury to be more important, thus making a head with fewer sutures healthier. However, de Soto claimed that external injuries are far less threatening to the health of the head than internal injuries, again in disagreement with Celsus.²⁶ He then applied this principle to the entire body, citing a section of the Hippocratic text *De alimento*, which holds that a more porous body is healthier throughout:

But in fact, health not of just the head, but of the whole body is stronger, the wider and more open the interstices of the body’s contexture (through which the soots are discharged) are. The very thing which Hippocrates said in the book *De alimento*...²⁷

In his understanding of the Hippocratic passage, the body needed to be breathable throughout to release harmful excrements. Moreover, de Soto, enumerated the fourth purpose of the cranial sutures and, again echoing Galen in *De usu partium*, asserted that the cranial sutures act as barriers from extensive fracturing of the skull, thus protecting it from external, as well as internal, injury, stating “whenever the cranium has been percussed or broken, breaking and fracturing cease, so that the [fracture] does not progress to the whole cranium.”²⁸ Although de Soto made an attempt to

²⁵ de Soto, 15: *Qui plures suturas habent, saniores capite sunt.*

²⁶ de Soto, 15.

²⁷ de Soto, 15: *Sed etiam totius corporis valetudo potior est, quanto rarior ac patentior corporis contextura (qua fuligines excernantur) fuerit: id quod Hippocrat. libro de alimento in hunc modum dixit.* The author of *De alimento* states that “porousness of a body for transpiration healthy for those from whom more is taken; denseness of body for transpiration unhealthy for those from whom less is taken. Those who transpire freely are weaker, healthier, and recover easily; those who transpire hardly are stronger before they are sick, but on falling sick they make difficult recovery. These for both whole and part.” Hippocrates, *Nutrimet*, trans. W. H. S. Jones, Loeb Classical Library I (London: William Heinemann, Ltd., 1923) 28 (353).

²⁸ de Soto, 15: *Ut siquando cranium percussum ruptumve fuerit, cesset ruptio ac fractura, ne per totum cranium progrediatur.*

comprehend Celsus' reasoning, he still did not agree with him on what conditions led to a healthier head.

The final points made by de Soto in his commentary on this passage focused on the issues of how the cranial sutures were defined and which, by this definition, are genuine. He wrote: "the sutures of the head exist in two diverse forms, for certain sutures are proper and legitimate; however, others are illegitimate and spurious."²⁹ According to de Soto, genuine cranial sutures are distinguished from spurious ones by the serrated pattern of the joint; whereas the joints of spurious sutures are smooth and lie flush against each other.³⁰ By this definition, the cranium has three legitimate sutures: the lambdoid, shaped similarly to the Greek Λ ; the coronal or *stephanion*; and the sagittal or straight suture running the length of the skull.³¹ Although de Soto considered these the only genuine sutures, the legitimacy of the joints have no bearing on the basic premise of his commentary – that an increased number of cranial sutures led to increased health of the head. This is demonstrated when he closes exegesis by writing "it suffices if you understand that the head having more sutures (either proper or improper), enjoys more firm and sound health," citing the Hippocratic work *De alimento*, which he had quoted earlier.³² Ending his commentary in this manner clearly echoed the Hippocratic passage, and emphasized de Soto's agreement with the notion that more cranial sutures equated to a healthier head overall.

Analyzing these passages demonstrates that de Soto's primary influences for this section of his commentary are indeed the authors of *De locis in homine* and *De alimento*, as well as Galen and his discussion of the cranial sutures from *De usu*

²⁹ de Soto, 15: *Suturae porro capitis in duplici sunt differentia, quaedam enim sunt propriae et legitima, aliae vero sunt nothae et spuriae.*

³⁰ de Soto, 15: *Quia per legitimas suturas ossa capitis connectuntur dentatim, ad serrae similitudinem.*

³¹ de Soto, 15.

³² de Soto, 15: *Sufficit tamen si intelligas, caput plures suturas (sive proprias sive improprias) habens, commodiori ac saniori uti valetudine.*

partium. All three of the ancient authors championed the belief that more sutures are healthier, a conviction that, as has been demonstrated, was not upheld universally. Moreover, the influence of Galen can be seen in de Soto's discussion of what constitutes a cranial suture and in the teleology of this part. Examining de Soto's commentary is beneficial in elucidating the constructed memory and reception of ancient medical practitioners by physicians and humanists in the early modern era. By understanding these connections, the medical practices and philosophies of early modern physicians can be more fully understood.

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