

ARE TOUCH AND TASTE NECESSARY?

Some Answers from Fourteenth-Century Natural Philosophy*

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Abstract

The relationship between natural philosophy and medicine is addressed in this paper by considering some late medieval texts on the sense of touch. The paper analyses the issue of “whether touch (and, relatedly, taste) is necessary” in the fourteenth-century questions on the *De sensu et sensato* by John Buridan, Nicole Oresme or Albert of Saxony (?), and Marsilius of Inghen. The three questions highlight how the intersection of natural philosophy and medicine helped shape late medieval theories of sensation, particularly in the *Parva naturalia* commentary tradition.

Keywords: Touch, taste, natural philosophy, medicine.

1. “*Is touch (and taste) necessary?*”: a question in late medieval texts

It is true that Aristotle (d. 322 BC) stressed the primacy of sight over the other senses (e.g., Aristoteles, *Metaphysica*, I.1, 980a22-28 and *De anima*,

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III.3, 492a3-4)¹. However, he nonetheless granted touch a special status in the sensory system, especially as far as natural philosophy is concerned. In the second book of the *De anima*, Aristotle stated both that touch is the only sense that all animals possess and that without touch it would be impossible to have any other sense (*De anima*, II.2, 413b-414a3)². Aristotle's *De anima* also contains a claim regarding the necessity of the sense of touch for animal survival (*De anima*, III.13, 435b4-19)³. At the beginning of the *De sensu et sensato* (436b10-12)⁴, touch and taste are discussed as necessarily belonging to all animals. In that work, taste is considered particularly necessary, since it allows for the distinction between pleasant and unpleasant food so that the latter can be avoided and the former pursued⁵.

Aristotle's statements about the importance and necessity of the sense of touch (and taste) did not escape the attention of those coming after him in the philosophical and scientific tradition. The topic appears in the works of major medieval thinkers and Aristotelian commentators. For instance, the Aristotelian position is reprised by Avicenna (d. 1037)⁶, Averroes (d. 1198)⁷,

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- 1 Aristoteles, *Metaphysica*, I.1, 980a22-28, in Aristotle, *The Complete Works of Aristotle. The Revised Oxford Translation*, edited by J. Barnes, 2 vols, Princeton University Press, Princeton 1984, p. 1552; Aristoteles, *De anima*, III.3, 429a3-4, in Aristotle, *The Complete Works of Aristotle*, cit., p. 682.
 - 2 Aristoteles, *De anima*, II.2, 413b-414a3, in Aristotle, *The Complete Works of Aristotle*, cit., p. 658.
 - 3 Aristoteles, *De anima*, III.13, 435b4-19, in Aristotle, *The Complete Works of Aristotle*, cit., p. 692. This is followed by the statement that touch is necessary for animal *being*, while the other senses apply only to animal *well-being*. Cfr. Aristoteles, *De anima*, III.13, 435b20-26, in Aristotle, *The Complete Works of Aristotle*, cit., p. 692.
 - 4 Aristoteles, *De sensu et sensato* (436b10-12), in Aristotle, *The Complete Works of Aristotle*, cit., p. 693.
 - 5 It is worth noting that, while in this passage of the *De sensu et sensato* taste is paired with touch and *both* senses are said to belong necessarily to all animals, in the third book of the *De anima* Aristotle distinguished between touch and taste. As indicated in footnote 3 above, in the *De anima*, only touch is said to be necessary to animal *being*, while taste, like sight, is referred to as an example of a sense necessary only for animal *well-being*.
 - 6 Cfr. Avicenna, *Liber de anima seu sextus de naturalibus*, I-II-III, edited by S. Van Riet, Peeters-Brill, Louvain-Leiden 1972, pars II, cap. 3, pp. 130-131. I thank Tommaso Alpina for his help with this passage.
 - 7 Cfr. Averroës, *Commentarium magnum in Aristotelis De anima libros*, edited by S. Crawford, The Medieval Academy of America, Cambridge, MA 1953, II, com. 28, p. 170; Averroës, *Compendia librorum Aristotelis qui Parva naturalia vocantur*, versiones latinae, vol. VII, edited by E.L. Shields, H. Blumberg, Cambridge, MA 1949, *De sensu et sensato*, pp. 3-4.

Albert the Great (d. 1280)⁸, and Thomas Aquinas (d. 1274)⁹. In general, the question of “whether touch (and taste) is necessary” seems to have been commonly addressed in medieval philosophy and science, especially in the commentary tradition on Aristotle’s *De sensu et sensato*¹⁰. The question is found, for example, in the *Quaestiones super librum De sensu et sensato* by Geoffrey of Aspill (d. 1287)¹¹, Peter of Auvergne (d. 1304)¹², Radulphus Brito (d. 1320/21)¹³, Peter of Flanders (?) (late thirteenth or early fourteenth century)¹⁴, John of Felmingham (?) (d. ca. 1300)¹⁵, John of Jandun (d. 1328)¹⁶, John Buridan (d. ca. 1361)¹⁷, Nicole Oresme (d. 1382)/Albert of Saxony (d. 1390) (?)¹⁸, Marsilius of Inghen (d. 1396)¹⁹, and John Versor (d. after 1482)²⁰. The question also appears in some anonymous *Quaestiones super librum De sensu et sensato*, namely those of the Vatican Anonymous 3061 (ca. 1300)²¹,

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- 8 Cfr. Albertus Magnus, *De anima*, edited by C. Stroik, Aschendorff, Münster 1968, III, tr. 5, c. 3, p. 247; Albertus Magnus, *Quaestiones super libris De animalibus*, edited by E. Filthaut, Aschendorff, Münster 1955, IV, q. 5, p. 141. Several references to the primacy of touch with respect to the other senses and to the general necessity of the sense of touch also appear in Albert the Great’s *De homine*: cfr. for instance Albertus Magnus, *De homine*, edited by H. Anzulewicz, J.R. Söder, Aschendorff, Münster 2008, p. 54; pp. 147-148; p. 205; p. 224; and pp. 246-247.
- 9 Cfr. Thomas de Aquino, *In Aristotelis librum De anima commentarium*, edited by A.M. Pirota, Marietti, Torino 1959, III, lect. XVIII, p. 204; Thomas de Aquino, *In Aristotelis libros De sensu et sensato, De memoria et reminescentia commentarium*, edited by R. Spiazzi, Marietti, Torino 1949, lect. II, 7, p. 8.
- 10 The references to the following authors and questions are taken from S. Ebbesen, C. Thomsen Thörnqvist, V. Decaix, *Questions on De sensu et sensato, De memoria and De somno et vigilia. A Catalogue*, in “Bulletin de philosophie médiévale”, LVII, 2015, pp. 59-115.
- 11 Q. 19: “Utrum tactus sit necessarius animali”, and q. 20: “Utrum gustus sit necessarius animali”. Cfr. *ivi*, p. 67.
- 12 Q. 9: “Utrum sensus tactus sit necessarius omni animali”, and q. 10: “Utrum gustus sit necessarius animali”. Cfr. *ivi*, p. 71.
- 13 Q. 5: “Utrum gustus et tactus sint necessarii omni animali”. Cfr. *ivi*, p. 73.
- 14 Q. 5: “Utrum tactus et gustus sint in omnibus animalibus et sint in eis necessarii”. Cfr. *ivi*, p. 76.
- 15 Q. 2.1: “Utrum sensus tactus et gustus insint necessario omni animali”. Cfr. *ivi*, p. 78. The work in this case is an *Expositio in librum De sensu et sensato*.
- 16 Q. 5: “Utrum gustus et tactus sint necessarii omnibus animalibus”. Cfr. *ivi*, p. 81.
- 17 Q. 2: “Utrum omni animali necessarii sint gustus et tactus”. Cfr. *ivi*, p. 83.
- 18 Q. 2: “Utrum omni animali sensus tactus et gustus sint necessarii”. Cfr. *ivi*, p. 84.
- 19 Q. 2: “Utrum omni animali sint necessarii gustus et tactus”. Cfr. *ivi*, p. 85.
- 20 Q. 2: “Utrum omnes sensus exteriores, scilicet visus, auditus, olfactus, gustus et tactus, sint necessarii cuilibet animali”. Cfr. *ivi*, p. 87.
- 21 Q. 5: “Utrum tactus et gustus insint omnibus animalibus”. Cfr. *ivi*, p. 74.

of the Parisian Anonymous 16160 (ca. 1300)²², and of the Anonymous Oriensis 33 (late thirteenth or early fourteenth century)²³. Sometimes, as in Aspall and Auvergne for instance, the authors devoted two separate questions to “whether touch is necessary” and “whether taste is necessary”²⁴. In most cases, however, the issues of the necessity of touch and of taste are paired together in the same question. Though less frequent, the issue of “whether touch (and taste) is necessary” also appears in the commentary tradition on the *De anima*, as the texts cited above by Avicenna, Averroes, Albert the Great, and Thomas Aquinas attest²⁵. The topic, for instance, is found in the *De anima* by Benedict Hesse of Krakow (d. 1456)²⁶, and, later on, in the *Exercitium de anima* by Bartholomaeus Arnoldi de Usingen (d. 1532)²⁷, in the *Expositio in tres libros Aristotelis De anima* by Augustinus Niphus (d. 1538)²⁸, and within a question on the differences between taste and touch in Conimbricenses’ *De anima*²⁹. It is also worth noting that the question appears not only in works of natural philosophy but also in medical texts. Taddeo Alderotti’s (d. 1295) *Isagoge*, for example, takes up the question *Utrum gustus sit necessarius*³⁰

22 Q. 3: “Utrum tactus sit necessarius omnibus animalibus et gustus”. Cfr. ivi, p. 75.

23 Q. 3: “Utrum tactus et gustus sint sensus necessarii animalium”. Cfr. ivi, p. 79.

24 Cfr. *supra*, footnotes 11 and 12.

25 Cfr. *supra*, footnotes 7, 8, and 9.

26 The commentary has a question titled “Utrum sensus tactus cuilibet animali sit necessarius”. Cfr. B. Burrichter, T. Dewender, *Die Diskussion der Frage nach der Unsterblichkeit in den Quaestiones in libros De anima des Benedikt Hesse von Krakau*, in O. Pluta (edited by), *Philosophie im 14. und 15. Jahrhundert*, Grüner, Amsterdam 1988, pp. 573–602, esp. p. 585.

27 Bartholomaeus Arnoldi de Usingen, *Exercitium de anima*, Erphordiis 1507, liber 3, tractatus 3, f. 73v–74v: “Utrum sensus tactus cuilibet animali sit necessarius”. I thank Pekka Kärkkäinen for his help with this reference.

28 Augustinus Niphus, *Expositio in tres libros Aristotelis De anima*, Venetiis 1559, II, f. 270: “Sensus autem primus inest omnibus tactus”; and ivi, III, ff. 894–896: “Secundum vero quod omni animali necesse est inesse tactum [...] Proposuit tactum esse necessarius animalibus, obiter quasi digrediens probat gustum esse necessarium animalibus eadem ratione, qua tactus est animalium necessarius. Est enim tactus necessarius animalibus, si animal certo temporum spatio servari debeat, hac etiam ratione et gustus necessarius est omnibus animalibus, quia gustu discernit alimentum conveniens et refutat alimentum perniciosum”.

29 The issue of the necessity of touch and taste is found in the question “Utrum ne gustus a sensu tactus, et natura, et organo differat”. Conimbricenses, *In tres libros De anima*, Conimbricae 1598, l. II, cap. X, q. 2, art. 1, f. 245. See specifically the following passage: “Ad id, quod postremo loco de tactus, et gustus necessitate adiectum fuit, dicendum est, solum tactum respectu omnium animantium esse absolute necessarium”. Ivi, f. 247.

30 Cfr. N.G. Siraisi, *Taddeo Alderotti and his Pupils. Two Generations of Italian Medical Learning*, Princeton University Press, Princeton 1981, p. 335.

and Tommaso del Garbo's (d. ca. 1370) *Summa medicinalis* devotes a long question to touch that discusses the necessity of the sense together with some other topics³¹. Further research is necessary to better map the presence of the issue in other commentaries on the *De sensu et sensato* and *De anima*, as well as in other medieval (and Renaissance) works. It is nonetheless clear that the issue appeared widely in medieval university texts³².

Despite its notable presence in medieval thought, existing scholarship has largely overlooked the medieval question of "whether touch and taste are necessary", as well as other issues about the sense of touch frequently addressed in the Middle Ages, such as "whether touch is one sense or several" or "whether touch is connected to the element of earth". In fact, recent scholarly attention has instead focused on the medieval issue of the organ and medium of touch³³. This question is undoubtedly interesting given its highly controversial character and location at the intersection of natural philosophy and medicine. While Aristotle mostly considered the heart the proper organ of touch and the flesh as its medium³⁴, Avicenna instead ex-

31 Q. 82: "Utrum tactus ad sui sensationem requirat medium quo mediante fiat sensatio tactus". Thomas de Garbo, *Summa medicinalis*, Venetiis 1531, q. 82, ff. 79ra-82rb. See specifically at the beginning of the question: "[I]n isto quaesito singulariter tria declarabimus: primus est quis sensus est tactus et quam in corpore habet necessitatem. Secundo de eius unitate et pluralitate. Tertio de principali quod quaeritur: in quo apparebit de organo eius". Ivi, f. 79ra.

32 The list of examples above is not intended to be complete.

33 See especially D.N. Hasse, *Avicenna's De anima in the Latin West. The Formation of a Peripatetic Philosophy of the Soul 1160-1300*, The Warburg Institute-N. Arago Editore, London-Torino 2000, pp. 98-106; D.N. Hasse, *Pietro d'Abano's Conciliator and the Theory of the Soul in Paris*, in J.A. Aertsens, K. Emery, A. Speer (herausgegeben), *Nach der Verurteilung von 1277*, Walter de Gruyter, Berlin 2001, pp. 635-653; D.N. Hasse, *The Soul's Faculties*, in R. Pasnau (edited by), *The Cambridge History of Medieval Philosophy*, vol. 1, Cambridge University Press, Cambridge 2010, pp. 305-319; H. Lagerlund, *Pietro d'Abano and the Anatomy of Perception*, in S. Knuuttila, P.A. Kärkkäinen (edited by), *Theories of Perception in Medieval and Early Modern Philosophy*, Springer, Dordrecht 2008, pp. 117-130; S. Knuuttila, P.A. Kärkkäinen, *Sense Perception. Medieval Theories*, in S. Knuuttila, J. Sihvola (edited by), *Sourcebook for the History of the Philosophy of Mind: Philosophical Psychology from Plato to Kant*, Springer, Dordrecht 2013, pp. 61-81; and C. Beneduce, *La fisiologia del tatto nel XIV secolo. Il caso di Giovanni Buridano*, cit., esp. pp. 211-212.

34 Aristotle's position is not consistent across his texts. In *De anima* (II.11, 423b18-27), Aristotle locates the organ of touch close to the heart and states that flesh is the medium of touch; cfr. Aristotle, *The Complete Works of Aristotle*, cit., p. 674. In *De sensu et sensato* (439a2-3), he confirms that the organ of touch (and taste) is located close to the heart; cfr. Aristotle, *The Complete Works of Aristotle*, cit., p. 697. In *De partibus animalium*, we find two different views: in 647a19 and

explicitly identified the nerves as the organs for touch and rejected the idea that touch needs a medium in order to function³⁵. These conflicting views were inherited and discussed by medieval scientists, generating one of the medieval topics constituting the so-called “controversy between philosophers and physicians”, which debated the biological themes that functioned as sites of divergence between the Aristotelian and medical traditions³⁶. In this paper, I will instead take a closer look at the issue of the necessity of touch (and taste) in the late Middle Ages to identify how it was addressed in late medieval natural philosophy. As I hope will become clear, this issue, which was sometimes interrelated with the controversial question of the proper organ for touch, is situated – like the question of the organ of touch – at the intersection of natural philosophy and medicine.

2. Three fourteenth-century questions on whether touch and taste are necessary

In what follows, I will take up three questions drawn from fourteenth-century commentaries on the *De sensu et sensato* as case studies illuminating how the issue of “whether touch (and taste) is necessary” was addressed in late medieval natural philosophy: q. 2, “Utrum omni animali necessarii sint gustus et tactus”, by John Buridan³⁷; q. 2, “Utrum omni animali sensus tactus et gustus sint necessarii”, by Nicole Oresme

653b25. Aristotle says that flesh is the organ of touch but, in 656b34, he returns to the more predominant position that the organ of touch is located “internally”; cfr. Aristotle, *The Complete Works of Aristotle*, cit., p. 1007, p. 1018, and p. 1023.

35 Cfr. Avicenna, *Liber de anima seu sextus de naturalibus*, cit., pars II, cap. 3, p. 138.

36 On the so-called “controversy between philosophers and physicians”, see for instance J. Chandelier, *Medicine and Philosophy*, in H. Lagerlund (edited by), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2020, pp. 1138-1146.

37 John Buridan’s *Parva naturalia* is contained in a set of manuscripts and in an early-modern printed edition: the so-called “Lockert edition”, named for its editor. The manuscript version can be found in the unpublished Ph.D. thesis of M. Stanek, *Jana Burydana Quaestiones super Parva naturalia Aristotelis. Edycja krytyczną i analiza historyczno-filozoficzna*, unpublished Ph.D. thesis, Uniwersytet Śląski, Katowice 2015. The printed edition is Johannes Buridanus, *Quaestiones in libros Parva naturalia*, Parisii 1516 and 1518. The two printed versions overlap. In this article, I will follow the Lockert edition of 1516. Buridan’s q. 2 of the *De sensu et sensato* is Johannes Buridanus, *Quaestiones in libros Parva naturalia, Quaestiones super librum De sensu et sensato*, Parisii 1516, q. 2, ff. 29rb-29vb.

or Albert of Saxony (?)³⁸; and Marsilius of Inghen's q. 2, "Utrum omni animali sint necessarii gustus et tactus"³⁹. Undoubtedly, other authors could also have been selected as case studies, and more comprehensive research on the topic should consider as many texts as possible. Yet, for this initial study, these three texts represent a useful starting point, since they belong to the same prominent intellectual environment – allowing us to see how the issue of the necessity of touch and taste was negotiated in an important niche of fourteenth-century natural philosophy⁴⁰.

The three texts share the same position and follow a similar argumentative approach to the issue of the necessity of touch and taste.

All three authors show that there are different ways in which we can understand touch to be a necessary sense and that only in some of these ways can touch be considered necessary to animals. The main ways in which touch can be considered "necessary" are three: 1) something is

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- 38 The edition of Nicole Oresme/Albert of Saxony's (?) *De sensu et sensato* that I follow in this article is by J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, La Nuova Italia Editrice, Firenze 1983. Nicole Oresme/Albert of Saxony's (?) q. 2 is Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, pp. 52-60. Agrimi's book also contains references to the problem of the attribution of this set of questions on Aristotle's *De sensu et sensato* to either Oresme or Albert; cfr. J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., pp. 9-51.
- 39 Maciej Stanek has prepared an edition of Marsilius of Inghen's *Parva naturalia*, based on manuscripts, which is currently unpublished. For Marsilius' *De sensu et sensato*, I will follow the text contained in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, to which I had the easiest access; I will provide a transcription of passages when necessary. I thank Paul Bakker for his help in reading some of Marsilius' passages. Any misreading, however, should be ascribed to me. Marsilius' q. 2 is Marsilius de Inghen, *Quaestiones super librum De sensu et sensato* in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, ff. 4va-6ra. For the other manuscripts containing Marsilius' *De sensu et sensato*, see S. Ebbesen, C. Thomsen Thörnqvist, V. Decaix, *Questions on De sensu et sensato, De memoria and De somno et vigilia*, cit., p. 85. I also had the opportunity to read Marsilius' q. 2 of the *De sensu et sensato* in the draft prepared by Stanek, whom I thank for his kind collaboration.
- 40 In fact, though recent scholarship claims, for good reason, that it is inaccurate to refer to a "Buridan's school" in which Buridan constituted the teacher of a group of pupils who repeated and developed his teachings, it cannot be denied that the works by Buridan, Oresme, Albert, and Marsilius originated from a common intellectual environment. On the so-called "Buridan's school" as a misnomer, see J.M.M.H. Thijssen, *The Buridan School Reassessed. John Buridan and Albert of Saxony*, in "Vivarium", XLII, 1, 2004, pp. 18-42. On Buridan, Oresme, Albert, and Marsilius as belonging to the same intellectual community, see J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., p. 13.

“necessary” when it cannot be other than how it is, as in the case of God; 2) something is “necessary” when it is strictly required for life; and 3) something is “necessary” when is it needed for good living, or rather, in order to avoid what is noxious and pursue what is useful to life⁴¹. There are also different meanings that can be attributed to a sense: a) a sense can be understood in terms of its potency, i.e., the potency of sensing (*pro potentia sensitiva*), or b) as performing sensation in act (*pro actu sentiendi*)⁴². The three authors agree that, while the sense of touch (like any other sense) is never necessary with regard to (1), since, unlike God, animals and their senses may not exist, touch is necessary in its potential aspect (a), in the senses (2) and (3) of “necessity”. In other words, touch understood as the potency of sensing is necessary to life and to good life. As an actual sensation (b), on the other hand, touch cannot *always* be considered necessary, because in certain cases (like during sleep) no tactile operations are performed⁴³.

The three texts then go on to show how the question becomes more challenging in the case of the necessity of taste (Buridan even explicitly writes: “However, about taste there is more difficulty [...]”)⁴⁴. With some slight differences in position and in the use of the arguments, the main claim of the three questions again overlaps. There are two ways in which “taste” can be understood: (i) as a means of discerning different flavors or (ii) as a means of discerning suitable or inconvenient food. The first (i) is the more proper way to understand “taste”, while the second (ii) is how “taste” is most commonly understood. In the first regard (i), taste does not coincide with touch and is localized only in the tongue or mouth, while in the second (ii), taste overlaps with touch and is also located in other bodily

41 Cfr. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va; Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, pp. 55-56; Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, f. 5ra.

42 Cfr. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va; Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, p. 56; Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, f. 5ra-b.

43 Cfr. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va; Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, pp. 56-57; Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, f. 5rb.

44 Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va.

parts. While taste as a means of discerning suitable or inconvenient food is common to all animals, taste as a means of discerning flavors is not common to all animals but only some of them⁴⁵.

The three authors support this position with some examples, which mostly overlap, although there are some minor differences. Buridan, for instance, distinguishes among animals that live attached to the earth (like shells) and more perfect animals. Shells and other animals that live attached to their own sources of nutrients do not need taste to discern flavors; they only need taste to distinguish excessive hot or cold, so they can close themselves if they encounter harmful agents and open themselves in suitable circumstances. Therefore, in this case taste means only discerning suitable or inconvenient food, which constitutes nothing more than using touch to distinguish primary qualities⁴⁶. More perfect animals, having a subtler complexion – namely a more refined bodily constitution – seek subtler and nobler food. For this reason, they are not only able to taste to discern suitable or inconvenient food but also have the capacity to recognize different flavors⁴⁷. There are cases in which neither touch understood as discernment of suitable or inconvenient food nor touch understood as discernment of flavors is needed. Plants, for instance, which are less perfect than animals, do not have any senses and can nourish themselves through the food to

45 Cfr. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va; Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, pp. 57-58; Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, f. 5rb.

46 “Alia autem sunt animalia terre affixa, que [...] propter supervenientia indigent bene tactu discernente nimis calidum aut nimis frigidum vel omnino lesivum ad hoc quod adveniente lesivo claudant se et adveniente conveniente aperient se nec indigent cognoscitivo saporum sed solum tactu cognoscitivo qualitatum primarum alimentum quia secundum illas alimentum nutrit [...]”. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va. On the type of animal movement mentioned by Buridan, see Albertus Magnus, *Quaestiones super libris De animalibus*, cit., I, q. 6, p. 84: “Dicendum, quod duplex est motus localis; unus est dilatationis et constrictionis et alius est processivus. Primus sequitur sensum gustus et tactus et omni animali inest, quia non est animal ita immobile, quin si adveniat nocivum, retrahat se, ut si pungatur, et si conveniens adveniat, dilatat se et diffundit se super illud”. Cfr. also Albertus Magnus, *De homine*, cit., p. 75, and Albertus Magnus, *Quaestiones super libris De animalibus*, cit., IV, q. 5, p. 141.

47 “Alia autem animalia perfectiora, propter subtiliorem complexionem, indigent alimento meliori et subtiliori. Ideo natura dedit illis, ultra sensum tactus, sensum discretivum saporum”. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va.

which they are connected without need for any powers of discernment⁴⁸. The same is true of embryos *in utero*. Taste as discernment of flavors is not necessary for the embryo, because it receives food not through the mouth but through the navel that connects it to the womb. In the same way, the embryo does not need taste to discern suitable or inconvenient food, because the nutrients to which it is connected naturally suit its needs. However, Buridan specifies that, though the embryo does not need taste, it does need the *potentiality* of tasting to use taste after birth⁴⁹.

Examples similar to Buridan's are found in the question by Nicole Oresme/Albert of Saxony (?). However, this author distinguishes among three categories of animals: perfect animals, animals that are perfect in relation to their own species but imperfect in themselves (like shells), and animals that are imperfect strictly speaking (like annulose animals that have been cut). Taste that recognizes flavors is not proper to eels or flies that have been cut, whose back ends are considered animals but do not actually perceive flavors⁵⁰. The same applies to shells and to the embryo,

48 “[...] et propter similem causam, nullus sensus inest plantis quia multum recedunt a perfectione animalium in tantum quod sufficienter nutriuntur et vivunt per alimentum sibi coniunctum sine aliqua eius discretione”. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, ff. 29va-b.

49 “Unde circa hoc notandum est quod aliqua animalia habent sibi alimentum coniunctum sicut embrio in utero et quia istud alimentum est naturaliter conveniens idcirco embrio tunc non indiget virtute actu discernente de alimento”. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 2, f. 29va. “Ad aliam: dictum est quod embrio non indiget uti gustu sed bene indiget habere potentiam gustativam ut ea utatur post exitum ab utero”. Ivi, f. 29vb.

50 “Secundo, notandum quod animalium quedam sunt perfecta sicut [*corr. ex sicud Ed.*] homines, alia imperfecta, et sunt in duplici differentia: nam quedam sunt que, quamvis sint imperfecta simpliciter, tamen in sua specie sunt perfecta, sicut [*corr. ex sicud Ed.*] ostree et conche marine; alia sunt magis imperfecta et sunt partes animalis anulosi decisi”. Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, p. 56. “Prima conclusio quod, accipiendo gustum pro sensu discretivo saporum [...], non omni animali gustus est necessarius, quia, anguilla divisa per medium, pars versus caudam non habet gustum, ergo etc.; consequentia tenet, quia illa pars dicitur esse animal cum habeat vitam, sensum et motum; hoc similiter patet de partibus animalium anolosorum, sicut [*corr. ex sicud Ed.*] muscarum etc.; ideo huiusmodi animal potest esse, vivere sine tali gustu, licet non diu duret”. Ivi, p. 57. On insects divided into segments, which keep living for a certain time, see Aristoteles, *De anima*, I.5, 411b19-31, in Aristotle, *The Complete Works of Aristotle*, cit., p. 655, and Aristoteles, *De anima*, II.2, 413b14-24, in Aristotle, *The Complete Works of Aristotle*, cit., p. 658. Such annulose animals were often referred to in medieval philosophical discussions of the soul. On this, see S.W. de Boer, *The Science of the Soul: The Commentary Tra-*

which do not nourish themselves through the mouth, where the type of taste that recognizes flavors is located⁵¹. The second type of taste, the one that distinguishes among different foods, is ascribed to all animals, and its presence/absence is identified as a major factor distinguishing between animals and plants. Animals have subtler and more proportioned complexions than plants, so they need more appropriate and well-proportioned food; in order to recognize this more sophisticated food, they require the type of taste that allows for discernment of suitable or inconvenient food (which instead is not necessary for plants)⁵². Finally, in Marsilius we again find the distinction between imperfect and perfect animals, with the second category being ascribed both types of taste⁵³. The example of the cut eel also

dition on Aristotle's De anima, c. 1260-c. 1360, Leuven University Press, Leuven 2013, pp. 245-296.

- 51 “Nono, ille sensus non omni animali est necessarius sine quo animal potest esse, vivere et nutrir; sed sine gustu aliqua animalia possunt esse, vivere et nutrir; ergo, etc.; maior nota; minor patet, quia fetus seu embrio vivit et nutritur in ventre matris non per os, in quo est gustus, sed per umbilicum”. Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, pp. 53-54. “Ad nonam: conceditur maior et negatur minor; ad probationem dicitur quod, accipiendo sensum gustus pro discretione saporum, sic ratio bene concludit, quod non omni animali sensus gustus est necessarius, sed non pro discretione alimenti”. Ivi, p. 60. “[...] quod confirmatur secundo, quia animalia viventia per radices sicut [*corr. ex sicud Ed.*] ostree et conche et fetus in ventre matris non vivunt per os, in quo solum ille gustus existit, et per consequens huiusmodi animalia non habent gustum, qui est discretivus saporum”. Ivi, pp. 57-58.
- 52 “Secunda conclusio, quod accipiendo gustum pro sensu discretivo alimenti [...] omni animali gustus est necessarius; probatur, quia talis est differentia inter plantas et animalia, quod animalia habent complexionem subtiliorem et magis proportionatam, ideo indigent nutrimento magis convenienti et proportionato, et ideo necesse fuit ad bene esse illorum animalium, quod haberent discretionem alimenti, ut appeterent convenienti et fugerent inconvenienti, quod non fuit necessarium plantis”. Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, p. 58.
- 53 “[...] capiendo ‘gustum’ primo modo [namely as a means of discerning different flavors], non omni animali sensus gustus est necessarius. Probatur quia stat animal esse sine isto gusto, igitur quaestio vera. [...] Antecedens patet de multis animalibus imperfectis ut de conchis et de ostris. [...] capiendo ‘gustum’ secundo modo [namely as a means of discerning suitable or inconvenient food], omni animali gustus est necessarius [...]”. Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, f. 5rb.

appears in Marsilius⁵⁴, as does the embryo. In Marsilius the embryo has the type of taste that discriminates suitable or inconvenient food, but it does not have the type of taste that can discern flavors – at least insofar as this is understood as an actual sensation⁵⁵.

Thus, aside from some slight differences, the three authors share the same arguments and conclusions in relation to the issue of touch and taste's necessity. Importantly, they also share another trait: they all link the necessity of touch to the controversial issue of the proper organ of touch. This is especially clear in another *De sensu* question, namely the one addressing "whether touch is an earthly sense"⁵⁶. In answering this question, the three authors extensively address the problem of the proper organ of touch. They all seem to support the medical position that the touch organ is a nerve or nerves that extend throughout the body⁵⁷. As is typical of the "controversy between philosophers and physicians", the authors also all try to make this

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- 54 "Confirmatur de anguilla divisa in duas vel tres partes, quarum quaelibet est animalis, et tamen non quaelibet habet gustum, ut notum est, et per consequens non omni animali gustus est necessarius". Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, f. 5ra. "Ad confirmationem dicitur quod pars anguillae de cuius essentia [?] sive integritate non est capud eiusdem anguillae, non habet gustum primo modo dictum, sed bene secundo modo dictum, scilicet illa pars quae est versus caudam". Ivi, f. 5vb.
- 55 "Octavo arguitur: embrio est animal; et tamen sibi gustus non est necessarius; igitur. Maior patet, quia embrio vivit primo in utero matris † quod [!] vita plantae et postea unio [?] † non recipit suum nutrimentum per organum gustus; igitur gustus non est sibi necessarius. Consequentia tenet, quia ad nichil deserviet sibi. Antecedens patet, quia embrio recipit suum nutrimentum per umbilicum, ubi non est organum gustus". Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, ff. 4vb-5ra. "[...] embrio habet gustum secundo modo, id est tactum, sed non habet gustum primo modo, saltem gustare actualiter". Ivi, f. 5vb.
- 56 Buridan's question is *Utrum organum tactus et organum gustus sint terrae a dominio*, in Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 8, ff. 32rb-33ra; Nicole Oresme/Albert of Saxony (?)'s question is *Utrum sensus tactus sit de natura terrae*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 8, pp. 122-132; Marsilius of Inghen's question is *Utrum organa gustus et tactus sint de natura terrae a dominio*, in Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 9, ff. 17ra-18va.
- 57 Cfr. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 8, f. 32vb-33ra; Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 8, p. 122, 123, 127-128; Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 9, f. 17va.

position compatible with the opposing one – in this case, with the Aristotelian position that touch is located in the heart⁵⁸. To support the idea that nerves constitute the organ of touch, Buridan and Nicole Oresme/Albert of Saxony (?) claim that, since the sense of touch is especially necessary to animals, it must belong to a solid organ that guarantees its protection from noxious agents. By “solid organ,” they mean nerves, which are more solid, compact, and earthy than the other sense organs⁵⁹. On the other hand, Marsilius uses discussion of the necessity of touch to advance the standpoint that the fact that touch is located in the nerves is compatible with the Aristotelian position that the heart is the touch organ. He describes touch as “primarily taking root in the heart” because, if the sense of touch is the most necessary to all animals, it makes sense that it would originate from the body’s primary organ, the heart⁶⁰. The topic of the necessity of touch is therefore linked by the three authors to the “controversy between philosophers and physicians” regarding the organ of touch and used to support the medical position that touch is located in the nerves; it is also used to “save Aristotle” by not excluding the role of the heart in haptic sensation.

Finally, the *quaestiones* on the necessity of touch and taste analysed in this paper also contain some additional elements that attest to the attention the three authors paid to the physiology of sensation and their attempts to incorporate medical stances into discussions of touch and taste’s necessity. Both the questions by Nicole Oresme/Albert of Saxony (?) and by Marsilius refer to epilepsy (or *morbum caducum*) in their discussions of the necessity of touch. They argue that people suffering from epilepsy,

58 Cfr. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 8, f. 33ra; Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 8, p. 123; Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 9, f. 17va.

59 Cfr. Johannes Buridanus, *Quaestiones in libros Parva naturalia*, cit., q. 8, ff. 32vb-33ra, and Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 8, pp. 127-128.

60 “Pro cuius declaratione notandum quod licet organum tactus sit expansus per totum corpus animalis, tamen radicum est principaliter in corde, quod probatur et persuadetur. Primo sic quia sensus tactus est animali magis necessarius inter ceteros sensus et ergo rationabile est quod procedit a membro principalissimo inter cetera <membra add. CB> eiusdem animali et ibi radicitur. Secundo persuadetur sic nam in quaecumque parte animalis fiat lesio, ipsum cor compatitur, igitur. Consequentia nota est. Antecedens datum [quod del. CB] per experientia”. Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 9, f. 17va.

like fully asleep people, do not have any sensory perception, since when pricked with something sharp, they do not feel anything. This does not mean that they do not have touch but rather that have only the potential for touch – the activity of touch being prevented for them by organ dysfunction (the organ is unspecified here)⁶¹. Pathological conditions of the body related to sensation also become the focus of a *quodlibetum* in Marsilius' text. Marsilius especially addresses the problem of taste perception in sick people. People who are ill, and especially those who are feverish, sense bitterness in the food they eat even when that food is sweet⁶². Marsilius attributes this to the indisposition of an organ (the organ is again unspecified, but from what follows, we can guess it is the mouth or the tongue, in this specific case): the organ contains noxious, viscous, and extremely bitter humors that are mixed with the food while it is chewed⁶³.

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- 61 “Sexto, epylettici et appopletici non habent sensum tactus, ergo non omni animali sensus tactus est necessarius; tenet consequentia, quia sunt animalia, cum sint homines; antecedens patet, quia aliquis eos pungens non sentirent”. Nicolaus Oresme sive Albertus de Saxonia, *Quaestiones super librum De sensu et sensato*, in J. Agrimi, *Le Quaestiones De sensu attribuite a Oresme e Alberto di Sassonia*, cit., q. 2, p. 53. On the connection between sleep and epilepsy in the Aristotelian tradition, see R. Lo Presti, “For Sleep, in Some Way, Is an Epileptic Seizure” (Somn. Vig. 3, 457 a9-10): *Empirical Background, Theoretical Function, and Transformations of the Sleep-Epilepsy Analogy in Aristotle and in Medieval Aristotelianism*, in B. Holmes, K.-D. Fischer (edited by), *The Frontiers of Ancient Science: Essays in Honor of Heinrich von Staden*, Walter de Gruyter, Berlin 2015, pp. 339-396.
- 62 In Aristotle's *Nicomachean Ethics*, we read something similar but not completely overlapping: “This happens, too, in the case of sweet things; the same things do not seem sweet to a man in a fever and a healthy man – nor hot to a weak man and one in good condition”. Aristoteles, *Ethica Nichomachea*, X.5, 1176a4-29, in Aristotle, *The Complete Works of Aristotle*, cit., 1859.
- 63 “Quodlibetum tertium: quare est quod infirmus [corr. ex infirmitas CB] et maxime febricitans iudicat omnia cibaria per eos sumpta esse amari saporis, cum tamen sint dulcis saporis secundum rei veritatem? Respondetur quod hoc est propter indispositionem organi, quia in organo aegri vel febricitantis sunt humores mali aut viscosi qui, dum cibus masticatur, conteruntur et commiscentur cibariis. Et quia isti humores sunt amari excellenter, ideo fortiter immutant organa sensus. Et sic iudicat sensus huiusmodi subiectum tamquam amarum et non tamquam dulce”. Marsilius de Inghen, *Quaestiones super librum De sensu et sensato*, in manuscript Erfurt, UB, Dep. Erf., CA 2° 334, q. 2, ff. 5va-vb. On the bitter tongue of feverish people and on the tongue's capacity to absorb liquids, see the following passage of the pseudo-Aristotelian *Problemata*: “Why is it that the tongue is indicative of many things? For in acute diseases it indicates fever by the presence of blisters upon it; [...] Is it because the tongue is capable of taking up moisture and is situated near the lungs, which are the seat of fevers? [...] Why is it that the tongue

Besides these physiological readings of touch and taste, which are framed in terms of healthy or pathological bodily conditions, another element should be recalled here: both Buridan and Nicole Oresme/Albert of Saxony (?) make explicit reference to the concept of “complexion” when discussing why taste as discernment of flavors is only proper to perfect animals. Perfect animals have a more balanced complexion that is linked to the need to seek subtler and nobler food, which makes a sense of taste that recognizes different flavors necessary⁶⁴. The concept of “complexion”, which primarily belongs to the epistemological domain of medicine, is therefore key to understanding the necessity of taste⁶⁵.

3. *The issue of the necessity of touch and taste at the intersection of natural philosophy and medicine*

Despite its conspicuous presence in medieval texts, the Aristotelian issue of the necessity of the sense of touch and taste and how this issue was read in the Middle Ages has been neglected in the scholarship. This paper offered some introductory insights on the issue by analysing three fourteenth-century questions on the necessity of touch and taste located in the commentaries on the *De sensu et sensato* by John Buridan, Nicole Oresme/

becomes bitter and salty and acid but never sweet? It is because these qualities are corruptions and so the tongue cannot perceive its own real nature?”. Pseudo-Aristoteles, *Problemata*, XXXIV.4, 963b33-964a3, in Aristotle, *The Complete Works of Aristotle*, cit., p. 1520.

64 Cfr. *supra*, p. 115.

65 For an introduction to the concept of “complexion” in medieval medicine, see the following few titles: I. Caiazzo, *Le mélange et la complexion chez les médecins du XIIIe siècle*, in N. Weill-Parot et al. (édité par), *De l’homme, de la nature et du monde. Mélanges d’histoire des sciences médiévales offerts à Danielle Jacquart*, Droz, Genève 2019, pp. 225-240; J. Chandelier, A. Robert, *Nature humaine et complexion du corps chez les médecins italiens de la fin du Moyen Âge*, in “Revue de synthèse”, CXXXIV, 4, 2013, pp. 473-510; D. Jacquart, *La complexion selon Pietro d’Abano*, in J.-P. Boudet, F. Collard, N. Weill-Parot (édité par), *Médecine, astrologie et magie entre Moyen Âge et Renaissance: autour de Pietro d’Abano*, SISMEL-Edizioni del Galluzzo, Firenze 2013, pp. 231-246; C. Crisciani, *Medici e filosofia*, in C. Casagrande, G. Fioravanti (a cura di), *La filosofia in Italia al tempo di Dante*, Il Mulino, Bologna 2016, pp. 37-64, esp. pp. 46-51. Most recently, the location of the concept of “complexion” at the crossroads of medicine and natural philosophy has been explored at the conference “*Complexio. Across Times and Disciplines*” (Radboud University, Nijmegen, February 25th-26th, 2021 (online)).

Albert of Saxony (?), and Marsilius of Inghen. The three questions share similar argumentative approaches and positions. When touch is considered as a potentiality of sensing, these authors consider it always necessary for animal survival and for a good life. Yet as an activity of sensation, they do not consider touch always necessary, because of cases like sleep or specific diseases in which tactility does not occur. Taste, on the other hand, they consider necessary to all animals only when it is meant as the capacity to distinguish among suitable and inconvenient sources of nourishment. Recognition of flavors, another task ascribed to the sense of taste, they instead find proper only to the most perfect animals.

Besides these general positions, the three authors' discussions of the necessity of touch and taste share another feature: they link the issue to the controversial problem of the location of touch – an issue commonly understood to be situated at the crossroads of the natural-philosophical and medical traditions. They moreover address the question of “whether touch and taste are necessary” with an eye to the physiology of sensation, healthy and pathological conditions of living bodies, and traditionally medical positions and concepts (such as identification of the nerves as the organ of touch or mobilization of the notion of “complexion”).

In this regard, the issue of the necessity of touch and taste also emerges as a site of intersection for natural philosophy and medicine. Indeed originating against the background of the problem raised by Aristotle, the issue is treated in the medieval texts analysed in this paper as open to medical influences. Together with the fact that questions on “whether touch and taste are necessary” appear not only in commentaries on the *De anima* and *De sensu et sensato* but also in medical treatises⁶⁶, this observation (1) invites us to include the issue of the necessity of touch and taste in studies of the relationship between natural philosophy and medicine in the late Middle Ages. The issue's connection with the problem of the bodily location of touch furthermore (2) suggests we should not consider these two medieval theoretical discourses on touch as separate to one another, since, as this paper has shown, their interconnection reinforces the paths of scholarly inquiry into late medieval theories of sensation and their mobilization of, altogether, natural philosophy and medicine. Finally, given that most of the discussions on the necessity of the sense of touch and taste seem to appear in the *Parva naturalia* commentary tradition, (3) study of this issue affords better knowledge of that tradition and its position at the intersection of natural philosophy and medicine.

66 Cfr. *supra*, pp. 110-111.

Indeed, scholars are increasingly demonstrating that the science developed in the medieval *Parva naturalia* tradition functions at the crossroads of several epistemological domains, interlacing natural philosophy especially with the medical thought. Both pioneering studies and more recent publications have pointed out that the *Parva naturalia* commentaries written in the fourteenth century, specifically those written in the Parisian *milieu* of the so-called “Buridan’s school”, are natural-philosophical treatises that look to medicine as a source of biological knowledge that is just as important as Aristotelian natural-philosophical teachings⁶⁷. By conducting a case study on the senses of touch and taste, this paper has ultimately helped provide additional evidence of this.

67 For an overview of the relationship between natural philosophy and medicine in late-medieval *Parva naturalia* with a specific reference to the fourteenth century and the so-called “Buridan’s school”, see J. Agrimi, *Les Quaestiones de sensu attribuées à Albert de Saxe. Quelques remarques sur les rapports entre philosophie naturelle et médecine chez Buridan, Oresme et Albert*, in J. Biard (édité par), *Itinéraires d’Albert de Saxe, Paris-Vienne au XIV^e siècle. Actes du Colloque organisé le 19-22 juin 1990 dans le cadre des activités de l’URA 1085 du CNRS à l’occasion du 600^e anniversaire de la mort d’Albert de Saxe*, Vrin, Paris 1991, pp. 191-204; C. Beneduce, *La teoria buridaniana dell’umido radicale tra filosofia naturale e medicina*, in “Rivista di Filosofia Neo-Scolastica”, CXI, 3, 2019, pp. 597-605; C. Beneduce, *John Buridan on Complexion. Natural Philosophy and Medicine in the Fourteenth Century*, in C. Beneduce, D. Vincenti (edited by), *Oeconomia corporis. The Body’s Normal and Pathological Constitution at the Intersection of Philosophy and Medicine*, ETS, Pisa 2018, pp. 41-49; C. Beneduce, *Conoscenza sensibile e nutrizione: il cardiocentrismo di Giovanni Buridano tra filosofia naturale e medicina*, in G. Garfagnini, A. Rodolfi (a cura di), *Scientia humana e scientia divina. Conoscenza del mondo e conoscenza di Dio*, ETS, Pisa 2016, pp. 133-146; C. Beneduce, P.J.J.M. Bakker, *John Buridan and Blasius of Parma on the Localization of the Common Sense*, in C. Grellard (édité par), *Miroir de l’amitié. Mélanges offerts à Joël Biard*, Vrin, Paris 2017, pp. 285-308; V. Decaix, *La conception buridanienne de la mémoire dans les Parva naturalia*, in C. Grellard (édité par), *Miroir de l’amitié. Mélanges offerts à Joël Biard*, Vrin, Paris 2017, pp. 309-329; C. Grellard, *La réception médiévale du De somno et vigilia. Approche anthropologique et épistémologique du rêve, d’Albert le grand à Jean Buridan*, in P.-M. Morel, C. Grellard (édité par), *Les Parva Naturalia d’Aristote. Fortune antique et médiévale*, Publications de la Sorbonne, Paris 2010, pp. 221-237. On the relationship between medicine and philosophy in commentaries on the *De sensu* that date to later in the sixteenth century, see R. Lo Presti, *Entre aristotélisme médical et médecine aristotélisante: le rapport entre médecine et philosophie dans les commentaires italiens du XVI^e siècle au De sensu d’Aristote*, in C. Crignon, D. Lefebvre (édité par), *Médecins et philosophes. Une histoire*, CNRS Editions, Paris 2019, pp. 195-222.