

## Pietro d'Abano's „Conciliator“ and the Theory of the Soul in Paris

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Pietro d'Abano was born in 1250 or, less probably, in 1257<sup>1</sup>. The sources about his life are few but so far as we can ascertain, he received his education in Italy, travelled to Constantinople to learn Greek, and moved to Paris in the last decade of the thirteenth century. Three dates connect him with Paris or at least with a French surrounding: In 1293, he completed a Latin translation of a French version of astrological treatises by Abraham ibn Ezra originally written in Hebrew. In 1295, he described himself, in his „*Compilatio physionomiae*“, as „*Petrus de Padua in civitate Parisiensi*“, and as „*Parisius philosophiae minimus alumnorum*“<sup>2</sup>. In 1303, he says in the „*Conciliator*“ (if we follow the dating in the text)<sup>3</sup> that he had been persecuted by the Jacobites – that is, the Dominican friars of the convent of St. Jacques in Paris – that he had been accused of 55 errors but rescued through the grace of God and with papal help<sup>4</sup>. Pietro returned to Padua by 1307 the latest, where he apparently revised his major works, a task that he finished in 1310. One of them, the commentary on the pseudo-Aristotelian „*Problemata*“, was clearly begun in Paris but completed in Padua, as stated in the Explicit: „*incepta quidem Parisius et laudabiliter Paduae terminata*“<sup>5</sup>.

<sup>1</sup> The dating of 1250 is based on references in the „*Conciliator*“, see Pietro d'Abano, *Conciliator*, diff. 9, ppt. III, ed. Venice 1565 (repr. Padua 1985), fol. 15raA: „*Anno gratiae 1303 quo ego Petrus Paduanensis hunc librum construxi*“, and ibid., diff. 49, ppt. III, fol. 74rbC: „*... ego tamen anno existens 53*“. Duhem's later dating of 1257 (P. Duhem, *Le système du monde*, vol. IV, Paris 1916, 245) rests on the fact that in manuscript Explicit the „*Conciliator*“ is often dated to 1310. On Pietro d'Abano's life see L. Thorndike, *A History of Experimental and Magic Science*, vol. II, New York 1923, 874–946; L. Norpoth, *Zur Bio-, Bibliographie und Wissenschaftslehre des Pietro d'Abano, Mediziners, Philosophen und Astronomen in Padua*, in: *Kyklos* 3 (1930), 292–353; E. Paschetto, *Pietro d'Abano, medico e filosofo*, Florence 1984, 19–34; G. Federici Vescovini, *Il „Lucidator dubitabilium astronomiae“ di Pietro d'Abano*, Padua 1988, 21–30.

<sup>2</sup> Pietro d'Abano, *Compilatio physionomiae*, Padua 1474, first page. I have compared MS London, Brit. Mus. Add 37079 (XVth cent.), fols 3r–v. The phrases are also in older manuscripts (for instance MS Paris, Bibl. Nat., lat. 2598, ff. 87ra–98rb, f. 87ra; see E. Paschetto, *La fisiognomica nell'enciclopedia delle scienze di Pietro d'Abano*, in: *Medioevo* 11 [1985], 97, n. 1).

<sup>3</sup> See note 1 above.

<sup>4</sup> Pietro d'Abano, *Conciliator*, diff. 48, ppt. III: „*Et ideo apparet hic erroneus intellectus Jacobitarum me persequentium tanquam posuerim animam intellectivam de potentia educi materiae, cum aliis mihi 54 ascriptis erroribus. A quorum manibus gratia dei et apostolica mediante laudabiliter evasi*“.

<sup>5</sup> Pietro d'Abano, *Expositio ... in librum problematum Aristotelis*, ed. Ioannis Herbort, (Venice) 1482, fol. ult.

In Padua, the Institution staged further trials against him<sup>6</sup>. Pietro died in 1315 or 1316. If it is true what Thomas of Strassburg claims to have seen with his own eyes, then Pietro d'Abano's bones were burned in the city of Padua as a punishment for his errors<sup>7</sup>.

From the Middle Ages until today, many attempts have been made to trace the reasons for his conflict with the Inquisition. One of the few facts known is that one of the propositions attributed to him – falsely, he claims – says that the intellectual soul was derived from the potentiality of matter: „*tamquam posuerim animam intellectivam de potentia educi materiae*“<sup>8</sup>. A very similar thesis had been condemned by the bishop of Paris in 1277<sup>9</sup>. In addition, Pietro mentions in the „Conciliator“ that for a long time impertinent people had accused him of derogating from divine wisdom; it may be indicative that this passage occurs after a long exposition of historical astrology (in answer to the question of whether human nature has become progressively weaker since creation)<sup>10</sup>. Later

<sup>6</sup> There is not much information on these accusations other than the 16th-century testimony of Bernardino Scardeone, who mentions that the first trial ended with a sentence of acquittal, while the second was still in progress at the time of Pietro's death. See B. Scardeone, *De antiquitate urbis Patavii et claris civibus Patavinis*, Basle 1560, 201: „*Nam is aliquando haereticos ac necromantiae a Petro Regensi medico delatus est: factus ei inimicus, ex aemulatione scientiae et famae, quod illi sicut et caeteris aliis in omni scientiarum genere longe praestaret. Et propterea bis contra ipsum inquisitum est in publico iudicio per inquisitores haereticae pravitatis. Primum anno salutis humanae 1306: in quo iudicio ei patroni fuerunt clarissimi viri Lupatus poeta, Iacobus Alvarotus, et Petrus Allichinus: et cum nihil probatum eo iudicio fuisset, ab eiusmodi calumnia liberatus est. Post novem autem annos, videlicet anno salutis nostrae 1315, rursum eiusdem criminis insimulatus, pendente adhuc iudicio, mortuus est ...*“.

<sup>7</sup> Thomas de Argentina, *Commentaria In IV libros Sententiarum*, Lib. IV, dist. 39, art. IV, ed. Venice 1564 (repr. Ridgewood, N. J. 1965), fol. 163va: „*Et ex hac opinione quidam haereticus, nomine Petrus de Apono, qui expeditissimus fuit medicus, accepit occasionem deridendi miracula Christi, et sanctorum, quantum ad suscitationem mortuorum. Dixit enim, quod tales resuscitati non erant vere mortui, sed infirmi praedicta infirmitate. Et si dicebatur <simile> de Lazaro, qui erat quatridentianus in monumento: praedicta autem infirmitas, sicut etiam ipse concessit, non potest tenere hominem ultra tres dies, ipse respondit, quod illud dictum de Lazaro verificabatur per synedochen, ita quod pars accipiebatur pro toto. Fuerunt enim, ut ipse dixit, solum tres dies naturales, numerabantur tamen quatuor: quia erat ibi pars primae diei, et pars quartae diei, quae duae partes aequipollebant uni diei naturali, quae cum duobus aliis diebus faciebant tres dies naturales. Sed isti mentita est iniquitas sua, et recepit mercedem erroris sui: Nam ego fui praesens, quando in civitate Paduana ossa sua pro his, et aliis suis erroribus, fuerunt combusta*“.

<sup>8</sup> See note 4 above.

<sup>9</sup> See R. Hissette, *Enquête sur les 219 articles condamnés à Paris le 7 Mars 1277*, Louvain – Paris 1977, art. 120, 195: „*Quod forma hominis non est ab extrinseco, sed educitur de potentia materiae, quia aliter non esset generatio univoca*“.

For an analysis of Pietro's theory of generation in the „*Compilatio physionomiae*“ see D. Jacquart, *L'Influence des astres sur le corps humain chez Pietro d'Abano*, in: B. Ribémont (ed.), *Le Corps et ses énigmes au Moyen Âge*, Caen 1993, 73–86, esp. 79: „... l'ensemble de sa démonstration n'est guère éloigné d'une des propositions condamnées à Paris en 1277“. The proposition referred to by Jacquart is no. 105, page 174 in Hissette: „*Quod in hora generationis hominis in corpore suo et per consequens in anima, quae sequitur corpus, ex ordine causarum superiorum et inferiorum inest homini dispositio inclinans ad tales actiones vel eventus. Error, nisi intelligatur de eventibus naturalibus et per viam dispositionis*“.

<sup>10</sup> Pietro d'Abano, *Conciliator*, diff. 9 („*Utrum natura humana sit debilitata ab eo quod antiquitus necne*“), ppt. 4, 15vbF: „*Sic igitur dictum sit quantum de hoc rationabiliter potest comprehendi iuxta sapientum mundi versutiam, nil sapientiae divinae superius praescriptae derogando, sed potius eam per omnia confirmando, cum*

biographical and legendary sources claim that Pietro was persecuted for magic and necromancy<sup>11</sup>. This is possible, but it has long been remarked that his extant writings contain hardly any contentious occultist doctrines<sup>12</sup>. The reason may be that he revised his works, or that he was persecuted for his teaching rather than for his books. We know that he taught medicine, philosophy and astronomy in Padua after 1307, and it is difficult to imagine that he did not teach in Paris.

The Parisian years of Pietro d'Abano are not only interesting for his struggle with the authorities, but also because, in all probability, it was in Paris that Pietro wrote his most celebrated work, the „Conciliator differentiarum philosophorum et medicorum“ (or, alternatively, „Conciliator litium medicinalium“). The book is clearly that of a physician. Its three parts deal with questions concerning the principles of the entire art of medicine – the arrangement following Johannitius and Avicenna's Canon – theoretical medicine and practical medicine. As a medical summa, it was enormously influential and determined the mode and content of many subsequent major works by physicians.

Here I am interested not so much in the medical sources of Pietro's book, which he may have got to know in the burgeoning faculty of medicine in Paris<sup>13</sup>, but rather in the „Conciliator“'s very rich philosophical material – and the doctrines on the soul in particular. The following survey musters four *differentiae* of Pietro's magnum opus: those on (1) the faculty of growth, (2) the question of whether flesh is the organ of touch, (3) vision, and (4) the *virtus vitalis*, which contains a succinct theory of the intellect. This study therefore has a limited focus; it does not aim at a comprehensive picture of Pietro's psychology<sup>14</sup> – for which one ought to pay attention also to his commentary on the Pseudo-Aristotelian

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*ipsa sola sit veritas et vita. In hoc autem me aliqui protervi nolentes aut potius impotentes audire gratis longis vexavere temporibus, a quorum manibus me meaque veritas laudabiliter eripuit praefata: demum mandato etiam superveniente apostolico“.*

<sup>11</sup> See the testimonies of Thomas of Strassburg and Bernardino Scardeone in notes 6 and 7 above.

<sup>12</sup> See Norpoth, *Zur Bio-, Bibliographie ...*, 298. Cf. Paschetto, Pietro d'Abano, 31–34, and Federici Vescovini, *Il Lucidator*, 29–30 (full references in note 1).

<sup>13</sup> For context, see V. L. Bullough, *The Medieval Medical University at Paris*, in: *Bulletin of the History of Medicine* 31 (1957), 197–211; E. Seiler, *Die Heilkunde des ausgehenden Mittelalters in Paris. Studien zur Struktur der spätscholastischen Medizin*, Wiesbaden 1967; D. Jacquart, *Le milieu médical en France du XIIe au XVe siècle*, Geneva 1981; ead., *La médecine médiévale dans le cadre Parisien: XIVe–XVe siècle*, Paris 1998, esp. 183–185; C. O'Boyle, *The art of medicine: medical teaching at the University of Paris, 1250–1400*, Leiden-Cologne 1998.

<sup>14</sup> For general information on Pietro's psychology see B. Nardi, *La teoria dell'anima e la generazione delle forme secondo Pietro d'Abano* (first published in 1912), in: Nardi, *Saggi sull'aristotelismo padovano dal secolo XIV al XVI*, Florence 1958, 1–17. A comprehensive but hardly reliable account can be found in S. Ferrari, *I tempi, la vita, le dottrine di Pietro d'Abano*, Geneva 1900, 327–353. Ferrari's interpretation received a fierce refutation by Nardi, *Intorno alle dottrine filosofiche di Pietro d'Abano* (first published 1920/21), in: Nardi, *Saggi sull'aristotelismo padovano ...*, 19–74, esp. 59–69, which convinced most subsequent scholars, such as, for instance, F. Lucchetta, *Recenti studi sull'Averroismo Padovano*, in: *L'Averroismo in Italia* (Atti dei convegni Lincei 40), Rome 1979, 99–100.

„Problemata“<sup>15</sup> – but at characterizing the „Conciliator“’s theory of the soul in view of contemporary currents in psychology. Since Pietro must have worked in close proximity to the Parisian arts faculty when composing the „Conciliator“ – even if he did not actually teach in that faculty – one would assume that his psychology did not differ much from later thirteenth-century „Quaestiones de anima“ by masters of arts.

Unfortunately, scholarship on „De anima“ commentaries in the thirteenth and early fourteenth centuries still has a long way to go, and one ought to keep in mind that the discovery and publication of further commentaries may alter the picture<sup>16</sup>. The following treatises by Parisian masters of arts have been consulted: Anonymous (ed. Vennebusch), „Quaestiones in tres libros de anima“, of ca. 1260, Paris or Oxford; Siger of Brabant, „Quaestiones in tertium de anima“, ca. 1265; Siger of Brabant, „Tractatus de anima intellectiva“, early 1270s; Anonymous (ed. Giele), „Quaestiones in I et II de anima“, early 1270s; Anonymous (ed. Van Steenberghen), „Quaestiones in De anima“, early 1270s; Anonymous (ed. Bazán), „Quaestiones de anima“, 1270s or later; Radulphus Brito, „Quaestiones super librum de anima“, between 1295 and 1307, that is, exactly contemporary to the „Conciliator“; John of Göttingen, „Sophisma de intellectu et intentione“, 1305; and John of Jandun, „Quaestiones super librum de anima“, redaction II, 1310–18<sup>17</sup>.

<sup>15</sup> The *Expositio* (as in note 5) is particularly rich on the senses of hearing (*particulae* 11 and 32), smelling (part. 12–14 and 33), and on the theory of light (part. 11, probl. 33). Pietro occasionally also touches upon intellect theory (e. g., part. 14, probl. 1, part. 30, probl. 4, see note 88 below). See the recent study and partial edition of *particula* 11 in C. Burnett, Hearing and Music in Book XI of Pietro d’Abano’s „Expositio Problematum Aristotelis“, in: N. van Deusen (ed.), *Tradition and Ecstasy: The Agony of the Fourteenth Century*, Ottawa 1997, 153–190. For general information on this treatise see N. Siraisi, *The „Expositio Problematum Aristotelis“ of Peter of Abano*, *Isis* 61 (1970), 321–339.

<sup>16</sup> „De anima“ commentaries before Thomas Aquinas’ „Sententia libri de anima“ of about 1268 are listed and discussed by R. A. Gauthier, *Les commentaires de la Vetus*, in: Thomas Aquinas, *Sententia libri de Anima*, ed. Gauthier, Rome–Paris 1984, 235\*–273\*. For the 13th century, A. Thirry summarizes the state of research for 1971 by listing 40 editions and 30 manuscripts (see her *Recherches relatives aux commentaires médiévaux du „De anima“ d’Aristote*, in: *Bulletin de philosophie médiévale* édité par la S. I. E. P. M. 13 (1971), 109–128). For the late 13th and early 14th century, see the only partially outdated table in Z. Kuksewicz, *De Siger de Brabant à Jacques de Plaisance*, Wrocław et al. 1968, 468–469. For further information on the commentators known by name, i. e. Siger of Brabant, Radulphus Brito and John of Jandun, see the entries in C. H. Lohr, *Medieval Latin Aristotle Commentaries*, in: *Traditio* 23–30 (1967–74), and id., *Commentateurs d’Aristote au moyen-âge latin: Bibliographie de la littérature secondaire récente*, Fribourg Suisse 1988. A recent contribution to the field is B. Bazán’s edition of Anonymous, *Sententia super II et III de anima* (ca. 1246–1248), Louvain-la-Neuve et al. 1998.

<sup>17</sup> Anonymous, *Quaestiones in tres libros de anima*, ed. J. Vennebusch, *Ein anonym Aristoteleskommentar des XIII. Jahrhunderts*, Paderborn 1963. Siger of Brabant, *Quaestiones in tertium de anima*, *De anima intellectiva*, *De aeternitate mundi*, ed. B. Bazán, Louvain-Paris 1972. The three anonymous commentaries of the 1270s (or later: as Bernardo Bazán remarked in Tübingen, the fact that there are no traces of the condemnation in the text edited by him, does not entail that the commentary was written before 1277) are published in: *Trois commentaires anonymes sur le traité de l’âme d’Aristote*, edd. B. Bazán, M. Giele and F. Van Steenberghen,

There are a number of significant features common to these treatises and the „Conciliator“, such as the tendency to address the same questions. In content, however, Pietro's psychology is notably different. This can be demonstrated for the various branches of the theory of the soul, to the first of which we shall now turn: the vegetative powers.

(1) *Differentia* 55 in the „Conciliator“ runs: „Utrum virtus augmentativa sit altera a nutritiva, necne“<sup>18</sup>. Pietro first describes the theory of Aristotle, who is said to acknowledge only two activities of the vegetative faculty, nutrition and reproduction, but not growth<sup>19</sup>. The opposite position is held by physicians and by natural philosophers, who recognize an additional faculty of growth. Then follow the four sections – named *propter primum*, *propter secundum*, etc. – characteristic of Pietro's *differentiae*: first, additional information on the problem, consisting in this case of quotations from Avicenna's „De anima“ and from Galen on the tripartite division of the vegetative soul; second, an exposition of major lines of conflict, here: a reference to a group of people who maintain that the nourishing and growing powers are identical but differ *ratione*; third, Pietro's solution, here: the theory of the physicians and natural philosophers, who say that these powers are not identical even though they are very similar („*Propter tertium quidem sciendum quod hae duae vires unius partis sunt animae, quae licet sibi multum sint affines, non tamen realiter sunt eadem, sicut medici cum physicis sensere*“)<sup>20</sup>; fourth, replies to the arguments introduced at the opening of the question.

Anonymous (ed. Vennebusch), Anonymous (ed. Bazán), Radulphus Brito and John of Jandun address the same or a very similar question, and, in principle, they come to the same conclusion as Pietro d'Abano: the three faculties are distinct<sup>21</sup>. While this shows Pietro's attachment to the philosophical tradition, his approach as a whole is clearly different. He is closest to the Parisian masters

Louvain – Paris 1971. Radulphus Brito, *Quaestiones super librum de anima*, MS London, Brit. Mus. Arundel 4, fols 1r–16v (the third and last part of this commentary was edited by W. Fauser, *Der Kommentar des Radulphus Brito zu Buch III De anima*, Münster 1974). Iohannes Almannus de Gottingha, *Sophisma de intellectu et intentione*, ed. Z. Kuksewicz, in: *Studia Mediewistyczne* 20 (1980), 47–121. John of Jandun, *Quaestiones super libros Aristotelis de anima*, ed. Venice 1583 (repr. Frankfurt am Main 1966). For contemporary Oxonian treatises (before 1301) see E. E. Synan, ed., *Questions on the De anima of Aristotle by Adam Burley and Walter Burley*, Leiden – New York – Cologne 1997.

<sup>18</sup> Pietro d'Abano, *Conciliator*, diff. 55, 81vb.

<sup>19</sup> Cf. Aristotle, *Peri psyches*, B.4, 416a18–21.

<sup>20</sup> Pietro d'Abano, *Conciliator*, diff. 56, ppt. 3, 82raB.

<sup>21</sup> Anonymous (ed. Vennebusch), *Quaestiones*, qu. 34, 183–185: „*Respondendum ad hoc quod distinctio vegetativae essentialiter distinguitur per istas 3 potentias ...*“; Anonymous (ed. Bazán), *Quaestiones*, qu. II.8, 414–416: „*In oppositum est Philosophus in littera, dicens quod nutritivum, augmentativum, generativum differunt formaliter. Hoc probatur tali ratione ...*“; Radulphus Brito, *Quaestiones*, MS London, Brit. Mus. Arundel 4, fol. 5r: „*Consequenter quaeritur utrum potentia nutritiva, augmentativa, generativa sint una potentia ...*“; John of Jandun, *Quaestiones*, ed. Venice 1583, qu. II.13, 118: „*His praemissis dicitur ad quaestionem consequenter quod virtus nutritiva, augmentativa et generativa sunt virtutes diversae, quia habent operationes per se diversas*“.

in the introductory part which presents the arguments *pro* and *contra* and in the last section *propter quartum*, which counters one side of these arguments. The middle sections one, two and three, however, are without parallel in psychological works originating from the arts faculty. Here Pietro employs a wider range of authorities: not only Aristotle, Averroes and *quidam medici*, as the masters put it, but also specifically Avicenna, Galen and Averroes' „Colliget“. His quotations, especially those in the section *propter secundum*, are longer and supported by reliable references. They are not meant to prove a specific part of the argument, but to present fully-fledged doctrines on the issue and help to delineate the doctrinal differences of earlier schools. In Pietro's account, it is very clear that the solution, which insists on distinguishing the powers, is not in full accordance with Aristotle's position. The masters of arts, in contrast, arrive at the same conclusion by way of systematic argumentation; they are not interested in (or perhaps avoid) mentioning openly that they take a Peripatetic and Galenic position which departs from Aristotle – this being an exegetical technique already apparent in Averroes' comment on the passage in Aristotle<sup>22</sup>.

In search of philosophers taking an approach similar to Pietro's, one has to turn to earlier decades in the thirteenth century. In the twelfth century, the doctrine of the tripartite division of the vegetative soul – or rather, in contemporary terminology, of the *virtus naturalis* – had not yet found full acceptance. Some, such as William of St. Thierry, distinguish between *generativa*, *pascitiva*, *nutritiva*, that is, between the faculties of reproduction, nutrition and growth, following the „Theorica Pantegni“<sup>23</sup>, whereas others only mention the division of the natural power into attractive, retentive, excretory and digestive faculties<sup>24</sup>. In the early thirteenth century, the discussion of the topic is dominated by the newly translated Arabic Peripatetic sources, and by Avicenna's „De anima“ in particular: John Blund, Albertus Magnus in „De homine“, Petrus Hispanus and others quote Avicenna's definitions of the faculties of *nutritiva*, *augmentativa*, *gene-*

<sup>22</sup> See Averroes, *Commentarium magnum in Aristotelis de anima libros*, ed. F. S. Crawford, Cambridge/Mass. 1953, II.42, 195. Aristotle's text runs (416 a18–21): „*Quia igitur virtus nutritiva et generativa sunt eadem, oportet necessario prius determinare quid est nutrimentum, et distinguere ab aliis virtutibus*“. Then follows Averroes' comment: „*Cum narravit prius quod vult loqui primo de virtute nutritiva, cum sit magis universalis, et primum eorum quae apparent in eo vel primum eorum de quibus consideratur ex hac virtute est quod est in anima et quod suae actiones sunt augmentare et nutrire et generare (!), incepit modo determinare ...*“.

<sup>23</sup> William of St. Thierry, *De natura corporis et animae*, ed. M. Lemoine, Paris 1988, cap. I.19, 91. The „Theorica Pantegni“ is Constantine the African's reworking of an Arabic medical summa by: ‘Alī ibn al-‘Abbās al-Maġrūsī.

<sup>24</sup> See, e. g., Pseudo-Augustine, *Liber de spiritu et anima*, ed. J.-P. Migne, *Patrologia Latina* 40, Paris 1887, cap. 20, col. 794: „*Naturalis namque virtus operatur in hepate sanguinem et alios quosque humores, quos per venas ad omnia corporis membra transmittit, ut inde augeantur et nutrantur. Vis ista quadrifaria est. Dividitur namque in appetitivam, retentivam, expulsivam et distributivam*“. Similarly William of Conches, *Glosae super Platonem*, ed. E. Jeaneau, Paris 1965, cap. 139, 241. For context see P. Michaud-Quantin, *La classification des puissances de l'âme au XIIe siècle*, in: *Revue du Moyen Age Latin* 5 (1949), 15–34. For the Graeco-Arabic background of this doctrine see M. Ullmann, *Islamic Medicine*, Edinburgh 1978, 60–62.

*rativa*, in which the faculty of growth is clearly distinguished from nutrition as a separate faculty responsible not for the preservation but for the perfection of the individual being<sup>25</sup>. However, from the 1240s onwards, that is, the time of the earliest commentaries on Aristotle's „De anima“ extant today, there is an increasing awareness of the fact that Aristotle seems to subsume growth under nutrition. The anonymous „Lectura in librum de anima“ (ca. 1245–50, ed. Gauthier), for example, deals with the problem by explaining that reproduction, nutrition and growth are different operations of the vegetative power, but that the first two are primary operations, whereas the third, growth, is a secondary activity<sup>26</sup>.

Pietro d'Abano's exposition of the issue benefits from the commentary tradition, and is steeped in up-to-date knowledge of medical authorities<sup>27</sup>, but his sympathies clearly are with the blend of Peripatetic and Galenic traditions widespread in the first half of the century. This is signaled by his long quotation from Avicenna's „De anima“ which appears in John Blund, Albertus Magnus und Petrus Hispanus but is very uncommon in Pietro's time<sup>28</sup>. It is apparent also in Pietro's essentialist formulation that the vegetative powers differ *realiter*, and in his explicit taking sides with „*medici cum physicis*“.

(2) The second step of our analysis leads us from the vegetative faculties to the senses. *Differentia* 42 treats the question: „*Utrum caro sit organum tactus necne*“<sup>29</sup>. The fact that this question appears in Pietro's book shows his close affiliation to, and knowledge of, the philosophical tradition of „De anima“ commentaries. For at least since Albertus Magnus's „De anima“<sup>30</sup> this issue belonged to a standard set of psychological *quaestiones*, and continued to do so until the time of Francisco Suarez<sup>31</sup>. The question of the organ of touch is a delicate one

<sup>25</sup> Avicenna, *Liber De Anima seu Sextus De Naturalibus*, ed. S. Van Riet, 2 vols, Louvain-Leiden 1968/72, vol. 1, cap. I.5, 81–82. See John Blund, *Tractatus de anima*, edd. D. A. Callus and R. W. Hunt, London 1970, cap. 5, 13 (without attribution to Avicenna); Albertus Magnus, *De homine* (*Summa de creaturis, secunda pars*), in: Albertus, *Opera omnia*, ed. A. Borgnet, 38 vols, Paris 1896, vol. 35, qu. 9.1, qu. 13.2 and qu. 17.1, 108 a, 128 a and 143 a; Petrus Hispanus, *Scientia libri de anima*, ed. M. A. Alonso, Madrid 1941, cap. 2.3, 93.

<sup>26</sup> Anonymous, *Lectura in librum de anima a quodam discipulo reportata*, ed. R. A. Gauthier, Grottaferrata–Rome 1985, cap. II.9.6, 265.

<sup>27</sup> For information on Pietro's knowledge of Galen and Celsus, see note 39 below.

<sup>28</sup> On the decline of Avicenna's „De anima“ as a model for philosophical psychology see Hasse, *Aristotle versus Progress*, in: *Was ist Philosophie im Mittelalter?*, edd. J. A. Aertsen and A. Speer, *Miscellanea Mediaevalia* 26, Berlin–New York 1998, 871–880.

<sup>29</sup> Pietro d'Abano, *Conciliator*, diff. 42, 63rb.

<sup>30</sup> Albertus Magnus, *De anima*, ed. C. Stroick, in: Albertus, *Opera Omnia*, ed. Colon., vol. 7.1, Münster 1968, cap. III, 31. The question was popularized by Albertus' „De anima“ (which dates 1254–57), but was current already in the 1240s; see Albertus Magnus, *De homine* (as in note 25), 33.3, 289 b–290 a, and Anonymous (ed. Gauthier), *Lectura in librum de anima* (as in note 26), cap. II.20.5, 395.

<sup>31</sup> F. Suarez, *Commentaria una cum quaestionibus in libros Aristotelis de anima*, ed. S. Castellote, vol. II, Madrid 1981, disp. VII, qu. 14, 734–748.

since Aristotle, as Averroes himself admits, did not yet know the nerves<sup>32</sup>. Anonymous (ed. Vennebusch), Anonymous (ed. Bazán) and Radulphus Brito come to slightly different conclusions, all of which attempt a reconciliation of Aristotle's views with the later tradition: the organ of touch is flesh together with the nerves, or a nerve originating from the heart, or a nerve extending through the entire body<sup>33</sup>. This compromising standpoint contrasts with the approach taken by more conservatively Aristotelian commentators of the earlier thirteenth century, who do not mention nerves when discussing the faculty of touch<sup>34</sup>.

The sensory nerves first appear in Western theories of touch in the works of William of Conches and William of St. Thierry; following the „Theorica Pantegni“, they maintain that there is no sense-perception in those parts of the body which do not have nerves<sup>35</sup>. From 1200 onwards, the discussion is enriched by the Graeco-Arabic Peripatetic tradition which is based on the distinction between organ and medium. Aristotle says in „De anima“ that the organ of touch is located within the body – near the heart, he adds in „De sensu et sensato“ – and that the medium of touch is flesh (he thus contradicts what he had written in „De partibus animalium“ where he makes flesh the organ rather than the medium)<sup>36</sup>. Avicenna, in contrast, argues that the organ is a combination of flesh and nerves and that there is no medium<sup>37</sup>. In the first half of the thirteenth century, the majority of scholastic writers quote Avicenna's theory without mentioning its non-Aristotelian character; some of them blend Aristotelian and Peripatetic theories. The situation changes when, in the 1250s, Albertus Magnus openly points to the doctrinal gulf that divides Aristotle from Galen

<sup>32</sup> Averroes, *Commentarium magnum in Aristotelis de anima libros* (as in note 22), 298, 312. On Aristotle, see F. Solmsen, *Greek Philosophy and the Discovery of the Nerves*, in: *Museum Helveticum* 18 (1961), 174.

<sup>33</sup> Anonymous (ed. Vennebusch), *Quaestiones*, qu. 52, 235: „... *necessarium est dicere quod omne mixtum in animali, sive sit caro sive pars carnis alia, in quo est reperire extra talem proportionem, sit organum in tactu, et sic non solum nervus sed etiam caro debet esse organum tactus*“; Anonymous (ed. Bazán), *Quaestiones*, qu. II.31, 451: „...  *dico tamen quod organum tactus est quidam nervus cordis ventriculosus habens se per modum retis extendentis se per totum corpus*“; Radulphus Brito, *Quaestiones*, MS Brit. Mus. Arundel 4, f. 7v: „*Consequenter quaeritur quid sit organum tactus et arguitur quod caro ... Dico ergo omissis istis opinionibus quod organum tactus est in qualibet parte corporis*“. John of Jandun, *Quaestiones*, qu. II.28, 188–193, discusses the medium but not the organ of touch; he reveals his standpoint, however, by not mentioning the nerves altogether in this context (full references in note 17).

<sup>34</sup> Adam of Buckfield, *Sententia de anima*, MS Oxford, Bodleian Library, Canon misc. 322, fols 40rb–42ra; Pseudo-Petrus Hispanus, *Expositio libri de anima*, in: *Pedro Hispano Obras Filosóficas*, ed. M. A. Alonso, vol. 3, Madrid 1952, 225–240; Thomas, *Sententia libri de anima*, ed. R. A. Gauthier, *Opera omnia iussu Leonis XIII P. M. edita, tomus XLV,1*, Rome–Paris 1984, II, 22, 159–162.

<sup>35</sup> William of St. Thierry, *De natura corporis et animae* (as in note 23), cap. 41, 119; William of Conches, *Dragmaticon philosophiae* (CCCM 167), ed. I. Ronca, Turnholt 1997, cap. VI.22, 258.

<sup>36</sup> Aristotle, *Peri psyches*, 423 b18–27; id., *De sensu et sensato*, 439 a2–3; id., *De partibus animalium*, 653 b25 (but cf. 656 b34).

<sup>37</sup> Avicenna, *De anima* (as in note 25), cap. I.5, 84–85, and II.3, 138.

and Avicenna. He castigates the later tradition for its deviation, but reintroduces its theory by interpreting Aristotle's term *caro* as referring not only to flesh but also to something similar to flesh such as organs mixed with nerves<sup>38</sup>.

Turning to Pietro d'Abano, one finds that his discussion of the issue is much more thorough and knowledgeable than that of any of his medieval predecessors. He invokes a great range of philosophical and medical authorities (Aristotle, Alexander, Themistius, Averroes, Avicenna, Algazel, Rhazes, Galen, Celsus<sup>39</sup>), and admits that there is *grandis discholia* on the topic<sup>40</sup>. Pietro tries to reconcile the opposing positions by distinguishing between a primary or basic organ of touch, which is the heart – thus saving Aristotle's doctrine that the organ lies close to the heart – and a secondary organ, which is the nerve. The nerve, in turn, can be understood in two ways, either with respect to its origin, that is the brain or heart, or as something independent of the central organs, which is mixed with flesh. Pietro is aware of the fact that this theory is not in accordance with Aristotle's. He has to come to terms with the fact that there are no nerves mentioned in Aristotle. In this respect, it is interesting to compare his solutions with the Parisian masters of arts who also concede the existence of sensory nerves.

Anonymous (ed. Vennebusch) takes the non-Aristotelian position that there is a double organ, a proximate one being a mixture of flesh and nerves, and a remote one being flesh only. „Hence, if Aristotle says that flesh is the medium, this is true with respect to the remote organ, because it is through the mediation of flesh that the nerve is affected. And, if he says in „De animalibus“ that flesh is the organ, this is true in the sense that he was about to understand and started to form his judgement“<sup>41</sup>. This last sentence is inspired by two passages in Averroes where the Arabic commentator claims that Aristotle had not yet known the nerves in reality, because they were discovered in later centuries, but that he had grasped the right solution in principle (*ratione*) by stating that the organ of touch lies „within“<sup>42</sup>.

<sup>38</sup> Albertus, *De anima* (as in note 30), cap. 2.3.34, 147. For a history of this issue in the thirteenth century, see D. N. Hasse, Avicenna's „De anima“ in the Latin West, Warburg Institute Studies and Texts (in print), chapter „Shellfish and Nerves“.

<sup>39</sup> For Pietro d'Abano's reading of Celsus, see D. Jacquart, *Du Moyen Age à la Renaissance: Pietro d'Abano et Berengario da Carpi lecteurs de la Préface de Celse*, in G. Sabbah, P. Mudry (eds.), *La médecine de Celse*, Université de Saint-Etienne 1994, 345–352 (repr. in ead., *La science médicale occidentale entre deux renaissances* (XIIe s.–XVe s.), Great Yarmouth 1997, art. XVII). For his translations of Galen, see M.-T. d'Alverny, Pietro d'Abano traducteur de Galien, in: *Medioevo: Rivista di storia della filosofia medievale* 11 (1985), 19–64.

<sup>40</sup> Pietro d'Abano, *Conciliator*, diff. 42, ppt. 2, 64raD: „Itaque apparet circa organum tactus grandis discholia“.

<sup>41</sup> Anonymous (ed. Vennebusch), *Quaestiones* (as in note 17), qu. 52, 236: „Unde cum dicit hic Aristoteles, quod caro est medium, istud verum est respectu organi extremi, quia mediante carne immutatur nervus, et cum dicit in de animalibus, quod caro est organum, verum est, primo apprehendens et iudicium inchoans“.

<sup>42</sup> Averroes, *Commentarium magnum in De anima* (as in note 22), 312: „Iam enim apparuit post Aristotelem in tempore eius, scilicet Alexandri, quod in animalibus sunt quaedam corpora quae dicuntur nervi“.

Anonymous (ed. Bazán) attributes to Aristotle the non-Aristotelian position that the organ of touch is a nerve that originates in the heart and extends from it through the entire body – taking his cue from the passage in „De sensu et sensato“ on the organ of touch lying close to the heart. With regard to the medium, he adopts the position of Aristotle's „De anima“ which attributes this role to flesh. The anonymous author thus rescues Aristotle by using a distinction similar to Pietro's between the primary and the secondary seat of the organ, but he does this at the expense of attributing to the Greek philosopher a knowledge of the nerves that he did not have – as he should know from Averroes or his fellow commentators. Moreover, when explaining away Aristotle's statement in „De animalibus“ that the organ of touch is flesh, Anonymous (ed. Bazán), lacking in imagination, claims that Aristotle wanted to say „a flesh-like nerve“ (*nervus carnosus*)<sup>43</sup>.

Radulphus Brito is in accordance with Anonymous (ed. Bazán) for the greater part of his argument. With respect to this last point, however, he adopts Averroes' historical solution by saying „*quod in illo tempore philosophus nesciebat nervos*“<sup>44</sup>.

We see here that Pietro's solution is a more refined adoption of arguments current in the arts faculty: of the distinction between a remote and a proximate organ, of the double interpretation of the term *caro*. What is different in Pietro – apart from the much clearer grasp of the true lines of conflict – is his usage of Averroes' statement on Aristotle not yet knowing the nerves, but smelling the right solution. He says:

*Sic igitur apparet quod Aristoteles ofsecit, ut innuit Commentator, nervum esse instrumentum tactus, veritati quasi compulsus ipsum intelligens per id quod intus*<sup>45</sup>.

A few lines further down, he adds that he finds it very difficult to fulfil both tasks expressed programmatically at the beginning of his solution, namely, not only to uncover the truth in this matter but also to reconcile the diverging standpoints among the authorities:

*Propter secundum huius sciendum quod id difficilius est quaesitum et praecipue quia Aristoteles non perfecte visus est naturam nervi cognoscere ... Nondum enim tempore suo perfecte cognita fuerat incisionis scientia (differentia 99) et ideo distantes facti sunt peripatetici in eo*<sup>46</sup>.

Because of the state of the art of anatomy at his time, Aristotle was prevented from a true understanding of the nature of the nerve. In *differentia* 99 on pleuresis and the lobes of the lung, Pietro again mentions Aristotle's restricted anatomical knowledge, as something he cannot be blamed for, Pietro says: even Galen, in whose time the art of medicine was truly perfected, said that it is not

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*et habent introitum in sensum et motum. Quod igitur apparuit Aristoteli ratione manifestatum est post sensu“*, and *ibid.*, 298.

<sup>43</sup> Anonymous (ed. Bazán), Quaestiones (as in note 17), qu. II.31, 450–451.

<sup>44</sup> Radulphus Brito, Quaestiones, MS London (as in note 17), f. 7v.

<sup>45</sup> Pietro d'Abano, Conciliator, diff. 42, ppt. 3, 64raD.

<sup>46</sup> Pietro d'Abano, *ibid.*, 64vaE.

impossible to improve upon himself by way of new anatomical findings<sup>47</sup>. While the masters of arts simply claim that Aristotle almost hit upon the right solution or actually attribute to Aristotle a theory of the nerves, Pietro refers to the history of anatomy as the ultimate source of the doctrinal problem. He thus demonstrates his superior understanding of the physiological branch of the theory of the soul.

(3) The third part of this survey is concerned with *differentia* 64 on vision. Where do we have to locate Pietro and contemporary „*Quaestiones de anima*“ in the history of optics? To answer this question, it seems sensible first to attempt a periodization of the history of high medieval optics and then to return to Pietro.

In the twelfth century, many authors adhered to various forms of extramission-theory, which either claim, on the basis of Plato and Calcidius, that something related to fire leaves the eye of the perceiver and with the help of external light (such as that of the sun) reaches and illuminates the object, or maintain with Galen that the *spiritus animalis* in the perceiver is sent out from the eye, eventually reaches an obstacle, is informed of its colour and then returns via the eye to the brain<sup>48</sup>. Closely connected to this group of doctrines is the theory of the *tria necessaria*, which is a forerunner to the well-known thirteenth-century distinction between *lux* and *lumen*. Calcidius, Macrobius, William of Conches, the author of the Sigtuna-commentary on the „*Timaios*“ and other writers discuss the necessary conditions for vision, distinguishing between interior light, an illuminated medium and an illuminated object<sup>49</sup>. Occasionally, this discussion already employed the terms *lux*, *lumen* and *splendor*. In the 1220s, Robert Grosseteste gave a new dimension to this theory in his treatise „*De luce seu de inchoatione formarum*“. *Lux* is the perfection of the first body of the universe, i. e. the firmament; it is not visible. *Lumen* is the spiritual body (or bodily spirit) which issues from the first body and creates further bodies, such as the spheres,

<sup>47</sup> Pietro d'Abano, *Conciliator*, diff. 99, ppt. 2, 147vbF: „*Et neque debet id Aristoteli in defectum reputari: quia illud, quod comprehenditur per viam anatomiae, est sicut res quae comprehenditur a numero motuum circulatorum neque illa erat completa scientia tempore Aristotelis; nam et si Galeni tempore fuerit ars medicinae vere perfecta, inquit tamen non fore impossibile posse quem supervenire sibi advenientem in ea, quod per eum non fuerat inventum ...*“

<sup>48</sup> See, for instance, Adelard of Bath, *Quaestiones naturales*, ed. C. Burnett, *Cambridge Medieval Classics* 9, Cambridge 1998, cap. 23, 140–142, and William of St. Thierry, *De natura corporis et animae* (as in note 23), cap. I.40, 113.

<sup>49</sup> See, e. g., William of Conches, *Philosophia*, edd. G. Maurach and H. Telle, Pretoria 1980, cap. IV.23, 108: „*Ut igitur visus sit, tria sunt necessaria: Interior radius, exterior splendor, obstaculum rei*“; and the very similar sentence in id., *Glosae super Platonem* (as in note 24), cap. 137, 236. For further information on 12th-century optics see D. C. Lindberg, *Theories of Vision from Al-Kindi to Kepler*, Chicago 1976, 90–94, and T. Ricklin, *Vue et vision chez Guillaume de Conches et Guillaume de Saint-Thierry. Le récit d'une controverse*, in: *Micrologus* 5 (1997), 19–41.

by multiplying itself. The focus of this theory is on creation rather than on vision<sup>50</sup>.

With the advent of the newly translated Greek and Arabic sources, the discussion is considerably enriched and enlarged. In the first half of the thirteenth century, the new learning is distributed mainly in Peripatetic shorthand-definitions of the faculty of vision: John Blund, Michael Scot, Jean de la Rochelle, Petrus Hispanus and others<sup>51</sup> quote definitions from Aristotle, Avicenna or Algazel, and thus initiate the slow turning of Western science towards the theory of intromission, in which light enters the eye from outside. In this period, it was not realized that the new Peripatetic position was in conflict with the older medical and Platonic tradition that had been favoured in the previous century. This situation changes in the early 1240s, when a number of authors explicitly discuss the conflicting positions of extramissionists and intromissionists: Albertus Magnus and, apparently, some masters of arts commenting upon Aristotle's „De anima“ – for instance the anonymous „Lectura in librum de anima“ (ca. 1245–50)<sup>52</sup>. At this stage, Western optics had already reached a high degree of complexity, as one can see from the handbook version of it preserved in Vincent of Beauvais' „Speculum naturale“. It was based on, and strongly influenced by, Avicenna, Averroes and Alkindi and their topics – examples being the role of the medium, seeing at night, and vision in animals<sup>53</sup>.

It is after 1250 that a new and well-known chapter in the history of optics was opened with the reception of Alhazen's (Ibn al-Haitham's) celebrated „Perspectiva“ and the optical theory of Euclid in the works of Roger Bacon dating from the 1260s, in Witelo's „Perspectiva“ of the early 1270s and of John Pecham's optical treatises of the later 1270s. These authors take up Alhazen's attempt to give a mathematical foundation to intromission-theory and discuss the phenomena of reflection and refraction<sup>54</sup>. The Alhazenian turn in the study of

<sup>50</sup> Robert Grosseteste, *De luce seu de inchoatione formarum*, ed. L. Baur, *Die philosophischen Werke des Robert Grosseteste, Bischofs von Lincoln*, in: *Beiträge zur Geschichte der Philosophie des Mittelalters*, vol. 9, Münster 1912, 52–55. See Lindberg, *Theories of Vision* (as in note 49), 94–102, and A. Speer, *Lux est prima forma corporalis: Lichtphysik oder Lichtmetaphysik bei Robert Grosseteste?*, in: *Medioevo: Rivista di storia della filosofia medievale* 20 (1994), 62–65.

<sup>51</sup> John Blund, *Tractatus de anima* (as in note 25), cap. 9, 24; Michael Scot, *Liber introductorius*, MS Escorial, Real Biblioteca f. III. 8, f. 37rb; Jean de la Rochelle, *Tractatus de divisione multiplici potentiarum animae*, ed. P. Michaud-Quantin, Paris 1964, cap. 2.1.4, 73; Petrus Hispanus, *Scientia libri de anima*, ed. M. A. Alonso, Madrid 1941, cap. 6.6, 219, cap. 6.13, 277; Anonymous, *Quaestiones super librum de anima*, partially ed. M. Gardinali, *Da Avicenna ad Averroë: Quaestiones super librum De anima*, Oxford 1250 c.a. (ms. Siena Com. L. III.21), in: *Rivista di storia della filosofia* 47 (1992), 394.

<sup>52</sup> Albertus Magnus, *De homine* (as in note 25), qu. 22, 215–228; Anonymous (ed. Gauthier), *Lectura in librum de anima* (as in note 26), qu. II.14, 322–324.

<sup>53</sup> Vincent of Beauvais, *Speculum naturale*, ed. Douai 1624 (repr.: Graz 1964–65), lib. 25, cap. 28–44, 1793–1807.

<sup>54</sup> On perspectivist optics see Lindberg, *Theories of Vision* (as in note 49), 107–120; A. I. Sabra, *Sensation and Inference in Alhazen's Theory of Visual Perception*, in: P. K. Machamer, R. G. Turnbull (eds.), *Studies in Perception*, Columbus/Ohio 1978, 160–185; A. M. Smith, *Getting the Big Picture in Perspectivist Optics*, in: *Isis* 72 (1981), 568–589.

optics is partly a Parisian story: Roger Bacon wrote in Paris, and John Pecham must have met him there when both were residents at the Franciscan friary in the late 1260s. Witelo, however, seems to have written at the papal court in Viterbo<sup>55</sup>.

We now come to the masters of arts in Paris in the later thirteenth century, that is, to the treatises mentioned above. The questions these authors are interested in when discussing Aristotle's „De anima“ concern the corporeality of *lux*, the function of *lumen* for the process of vision, the multiplication of *lumen* in the medium, the function of colour as the object of sight, the extension of the medium, and seeing at night. The sources of this discussion are Aristotle and Averroes, but also Albertus's „De anima“. The theory of *lumen* as *multiplicatio specierum* derives partly from Grosseteste. Most of these masters remain untouched by the Alhazenian turn taken in optics during the 1260s and 1270s<sup>56</sup>. What then is the standpoint of Pietro d'Abano?

The first thing to note about Pietro's *differentia* 64 on optics in the „Conciliator“ is that its question runs: „*Utrum visus fiat extramittendo an intus suscipiendo*“. This, basically, is a question more fashionable in the 1240s than in the 1290s<sup>57</sup>. The masters of arts of the later thirteenth century do not give prominence to the question; it is raised by the perspectivist author John Pecham, who answers by quoting Alhazen<sup>58</sup>. Pietro, on the other hand, does not seem to use Alhazen at all in his section. The structure of his *differentia* is the following. After an introductory series of arguments in favour of extramission, accompanied by some Peripatetic counterarguments, Pietro goes through the four parts which are characteristic of a section of the „Conciliator“: first, definitions of *pupilla*, *lux*, *lumen*, *splendor* and *color*; second, the lines of conflict: intromissionists, extramissionists and a modern combination of both positions; third, the solution: Aristotle's intromission theory; fourth, replies to the arguments of the opposing standpoint<sup>59</sup>.

The optical section of the „Conciliator“ is not to be grouped with Bacon's, Witelo's and Pecham's perspectivist optics. But is it akin to the optics of the arts

<sup>55</sup> On Witelo in Viterbo see A. Paravicini Bagliani, *Medicina e scienze della natura alla corte di Bonifacio VIII: uomini e libri*, in: *Roma anno 1300*, ed. A. M. Romanini, Rome 1983, 773–774.

<sup>56</sup> See Anonymous (ed. Vennebusch), *Quaestiones*, qu. 38–41, 193–204; Anonymous (ed. Bazán), *Quaestiones*, qu. II.18–21, 431–437; Anonymous, *Quaestiones de anima*, ed. M. Giele, in: *Trois commentaires ...* (as in note 17), qu. 15 and 22–25, 92–93 and 102–115; Radulphus Brito, *Quaestiones*, MS Brit. Mus. Arundel 4, fols 6r–v: „*Consequenter quaeritur utrum lumen requiratur ad visionem propter colores ut det eis dispositionem <em> per quam possint videri vel propter ipsum medium ... Consequenter quaeritur utrum lumen sit corpus ... Consequenter quaeritur [utrum] si medium esset actu infinitum utrum corpus luminosum possit illud totum medium illuminare ... Consequenter quaeritur utrum lumen habeat esse in medio realiter*“ (this set of questions is almost identical to the one in Anonymous, ed. Bazán); John of Jandun, *Quaestiones*, ed. Venice 1583, qu. II.19–21, 164–172 (full references in note 17).

<sup>57</sup> For a twelfth-century discussion of this issue see Adelard, *Quaestiones naturales* (as in note 48), cap. 23, 134.

<sup>58</sup> John Pecham, *Tractatus de perspectiva*, ed. D. C. Lindberg, New York 1972, cap. 4, 36–42.

<sup>59</sup> Pietro d'Abano, *Conciliator*, diff. 64, 94va–96vb.

faculty of the time, or to the Peripatetic optics of the 1240s or to the shorthand definitions of vision popular between 1200 and 1240 or to Grosseteste's theory of light or to the medical optics of the twelfth century? It is difficult to trace the sources for Pietro's theory as a whole, but one clue to his position is the definition of *lumen*.

The first sentence is a literal quotation from Avicenna's „De anima“, chapter III,3: it states that *lumen* is a quality of a body borrowed from another body which is equipped with light by nature. The second sentence further explains this definition by giving examples for bodies with natural light: the sun or fire.

(1) *Lumen vero est qualitas, quam corpus non translucens mutuatur a lucido, et efficitur ea translucens actu; (2) differt enim a luce, quia lux est in corpore per se lucido, ut sole, vel igne, lumen vero receptum est ex ipsa in medio; est enim corporis habentis lucem*<sup>60</sup>.

This is not the standard definition of *lumen*. With respect to many other authors – Anonymous, „De anima et potentiis eius“ (ed. Gauthier), Anonymous, „De potentiis animae et obiectis“ (ed. Callus), Bonaventure, Thomas Aquinas, John Pecham, Anonymous (ed. Giele), John of Jandun – what David Lindberg wrote about Avicenna's distinction between *lux* and *lumen* is true: it was „widely (but not universally) employed: ... *lux* was light in the body; *lumen* was light in the medium“<sup>61</sup>.

One should note, however, that this is not what Avicenna said, neither in the Arabic, nor in the Latin. For Avicenna, *lux* is the natural light of bodies such as the sun, *lumen* is the acquired light in bodies such as a wall which are not translucent and hence are not a medium: „*Lumen vero est qualitas quam corpus NON translucens mutuatur a lucido*“<sup>62</sup>. The distinction that became popular in the thirteenth century essentially is a misquotation that leaves out the *non*; and it is a tendentious, namely an Aristotelianized version of Avicenna's definition, since it makes this kind of light not a quality of a body but a state of the translucent medium<sup>63</sup>.

The only thirteenth-century authors known to me who preserve the correct reading with *non* are Albertus Magnus (in a number of works: „De homine“, „Super Dionysium de divinis nominibus“, „De intellectu et intelligibili“) <sup>64</sup>, Tad-

<sup>60</sup> Pietro d'Abano, Conciliator, diff. 64, ppt. 1, 95rb.

<sup>61</sup> D. C. Lindberg, Optics, Western European, in: Dictionary of the Middle Ages, vol. 9, New York 1987, 249. Cf., similarly, L. Sturlese, Optik, in: Lexikon des Mittelalters, vol. 6, Munich – Zürich 1993, 1420.

<sup>62</sup> Avicenna, De anima (as in note 25), cap. III.3, 194. For the Arabic see Avicenna, aš-Šifā', at-Tabrīyāt, Kitāb an-nafs (= De anima), ed. F. Rahman, London 1959, 104.

<sup>63</sup> See Hasse, Avicenna's „De anima“ in the Latin West (as in note 38), chapter on optics.

<sup>64</sup> Albertus Magnus, De homine (as in note 25), 21.1, 184 b; id., Super Dionysium de divinis nominibus, ed. P. Simon, in: Albertus, Opera Omnia, ed. Colon., vol. 37,1, Münster 1972, 2sol, 63; id., De intellectu et intelligibili, in: Albertus, Opera omnia, ed. A. Borgnet, vol. 9, Paris 1890, 3.1, 498 b.

deo Alderotti<sup>65</sup> – and Pietro d'Abano. Pietro's definition, however, switches back to the Aristotelianized version immediately: in the second sentence, acquired light is identified with light in the medium. The closest parallel to this position – namely, a correct quotation from Avicenna plus an Aristotelianizing interpretation – can be found in Albertus' „De anima“<sup>66</sup>.

If Pietro is in partial alliance with Albertus Magnus on this point, he apparently draws directly on Albertus' „De homine“ when describing the major lines of conflict in the field of optics. In the „Conciliator“ it says:

*Quidam namque priorum dixerunt visionem perfici extramittendo, alii interius assumendo. Aliqui autem modernorum utrumque in unum collegerunt*<sup>67</sup>.

And Pietro adds that according to this group of modern writers vision comes about by emitting something *and* by receiving forms from outside. Albertus Magnus seems to be the only author of the thirteenth century to mention these *moderni*, once in his „De homine“ (of ca. 1243), where he speaks about „*quidam modernorum*“ who maintain that vision happens „*intus suscipiendo et extra mittendo*“<sup>68</sup>, and once in the later treatise „De sensu“ (dating around 1259). Here, however, the reference is not to *moderni* but to: „*quaedam novella et fatua invenit <ur> non opinio sed insania quorundam*“<sup>69</sup>. We do not know the identity of these *moderni*; the term may be a reference to a current in the arts faculty, of which the anonymous author of the „Lectura in librum de anima“ (ca. 1245–50) is a witness<sup>70</sup>.

<sup>65</sup> See Taddeo Alderotti, *Expositio in Isagogas Joannitianas*, Venice 1527, fol. 362va: „*Lumen inquit <Avicenna> est qualitas quam acquirit aliquid corpus tenebrosus a corpore lucido mediante corpore diaphano, verbi gratia qualitas quae est in luna dicitur lumen, quia ipsa mutuatur ipsum a sole mediante diaphanitate coelorum et elementorum. Ex quo patet quod lumen est sicut effectus lucis secundum Avicennam. Secundum autem Aristotelem non est differentia. Dicit enim quod lumen est velut color lucidi et vocat lucidum ipsum diaphanum quando suscipit in se perfectionem a lumine*“. Taddeo's optical theory is described in N. Siraisi, *Taddeo Alderotti and his pupils*, Princeton 1981, 217–222. For a comparison of the two authors (Alderotti lived one generation before Pietro), see Siraisi, *Pietro d'Abano and Taddeo Alderotti: Two Models of Medical Culture*, in: *Medioevo: Rivista di storia della filosofia medievale* 11 (1985), 139–162.

<sup>66</sup> Albertus, *De anima* (as in note 30), 2.3.8, 110: „*Lumen autem est quod receptum est in alio corpore illuminato. Et ideo lumen est receptus habitus in natura diaphani*“. See Siraisi, *The „Expositio Problemata“* (as in note 15), 331–332, for Pietro's treatment of the issue in his commentary on the „*Problemata*“, part. 11, probl. 33.

<sup>67</sup> Pietro d'Abano, *Conciliator*, diff. 64, ppt. 2, 95rb.

<sup>68</sup> Albertus, *De homine* (as in note 25), qu. 22, 223 b: „*Sunt autem quidam modernorum qui dicunt quod visus sit et intus suscipiendo et extra mittendo radios et lumen*“.

<sup>69</sup> Albertus, *De sensu et sensato*, in: id., *Opera omnia*, ed. A. Borgnet, vol. 9, Paris 1890, I.5, 10 b: „*Quaedam autem novella et fatua invenit <ur> non opinio sed insania quorundam dicentium nos videre et intus suscipientes et extra mittentes, quia dicunt nos radios emitte et formas suscipere. Sed quia isti dicta sua non adaptant ad causas naturales, ideo contemnenda sunt dicta eorum*“.

<sup>70</sup> Anonymous, *Lectura in librum de anima* (as in note 26), qu. II.14, 324, lines 324–327. For various other hypotheses (Platonic writers of the twelfth century, Robert Grosseteste, Bartholomaeus Anglicus) see Lindberg, *Theories of Vision* (as in note 49), 106; H. Anzulewicz, *Perspektive und Raumvorstellung in den Frühwerken des Albertus Magnus*, in: J. A. Aertsen / A. Speer (eds.), *Raum und Raumvorstellungen im Mittelalter* (Miscellanea Mediaevalia 25), Berlin–New

The impression that Pietro's optics continue a Peripatetic tradition which had reached its culmination with Albertus Magnus, but of which there is a dearth of witnesses between 1260 and 1290, is corroborated by Pietro's central argument, an argument in favour of intromission theory, which is of the type *ex consequenti*, as he says; it demonstrates the impossibility of extramission by refusing four possible ways of partial or complete connection between the eye and the object<sup>71</sup>. This lengthy argument appears once in Albertus' „De sensu“<sup>72</sup>, but differences in the wording show that Pietro d'Abano was not reading Albertus Magnus but his source, Avicenna's „De anima“, book three on vision<sup>73</sup>. This is surprising, because book three is very tough going: it is remarkable for its length – 114 pages in Simone Van Riet's edition entirely devoted to optics – and for a very complicated line of argument. Only Albertus Magnus, the champion of Peripatetic doxography, confidently draws upon book three – and Pietro d'Abano, who had read his Albertus and his Avicenna in addition to various other authors of the Greek and Arabic tradition.

(4) After examples from the vegetative powers and sense-perception, one would now expect an analysis of Pietro's theory of the intellect, but the intellect, naturally, is of less interest to the physician than to the master of arts. Although there is no separate question on the intellect in the „Conciliator“, this does not mean that Pietro was not concerned with the topic. As mentioned above, he was accused of holding that the intellectual soul was derived from the potentiality of matter. Bruno Nardi has argued that Pietro's true standpoint on this issue is conventional: the intellectual soul is given by God when the mixture of the elements has reached a high degree of purity<sup>74</sup>. Less conventional, however, is the extraordinary role assigned to the stars in the process of generation: the constitution of the sperm's *virtus informativa* is affected by their influence<sup>75</sup>.

While this topic, the creation of the souls and the causes of life, is treated in *differentiae* 21, 48 and 71, the most comprehensive section on intellect appears in *differentia* 57 („*Utrum virtus vitalis sit altera, necne*“). It takes the form of a presentation of the philosophers's theory, which Pietro seems to sympathize with. It is part of a general survey of the soul's faculties, a *virium animae catena*:

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York 1998, 263, and id., *De forma resultante in speculo. Die theologische Relevanz des Bildbegriffs und des Spiegelbildmodells in den Frühwerken des Albertus Magnus*, 2 vols, Münster 1999, vol. 1, 227.

<sup>71</sup> Pietro d'Abano, *Conciliator*, diff. 64, ppt. 3, 95vb–96ra.

<sup>72</sup> Albertus, *De sensu et sensato* (as in note 69), I.7, 14b–16a.

<sup>73</sup> Avicenna, *De anima* (as in note 25), III.5, 225–234.

<sup>74</sup> See Nardi, *La teoria dell'anima* (as in note 14), 1–9, and Pietro d'Abano, *Conciliator*, diff. 71, ppt. 3, 108va. Cf. Avicenna, *De anima* (as in note 25), cap. V.7, 172, and id., *De medicinis cordialibus* (ed. in the same volume), 190; Thomas, *Scriptum super sententiis*, edd. R. P. Mandonnet / M. F. Moos, Paris 1929–47, II.15.2.2.7, 380.

<sup>75</sup> See Jacquart, *L'Influence des astres* (as in note 9), 78–79. Cf. also G. Federici Vescovini, *Pietro d'Abano e la medicina astrologica dello „Speculum physiognomiae“ di Michele Savonarola*, in: R. B. Kecks (ed.), *Musagetes: Festschrift für Wolfram Prinz*, Berlin 1991, 167–177.

the three vegetative faculties, the five external senses, the hidden senses – common sense, imagination/phantasia, imaginative/cogitative faculty, estimative and retentive faculty, i. e. the Avicennian scheme – and the intellect, divided into practical and speculative intellect, which in turn comprises the threefold potential intellect and the active intellect, described by Avicenna as something separate, by Aristotle as part of the soul, and by Averroes as the form of the intellect *in habitu*<sup>76</sup>.

The section on Averroes does not contain anything contentious; it is not concerned with the doctrine of the unicity of the material intellect, as presented in „Commentarium Magnum“, chapter III.5<sup>77</sup>. Pietro instead gives a summary of chapter III.36, that is, of Averroes' theory that the speculative intellect as matter or instrument joins with the active intellect as form, the intellect *in habitu* (or material intellect) serving as a basis; when this conjunction reaches perfect actuality, the person knows everything in a god-like way, says Averroes, citing Themistius<sup>78</sup> – this being a passage of considerable importance already for Albertus Magnus' psychological theory<sup>79</sup>.

Pietro opens his account of the theoretical intellect with a doctrine which was well-known in thirteenth-century scholasticism: the doctrine of the four intellects<sup>80</sup>. The first intellect is bare of all intelligible forms; the second knows the primary intelligibles, an example being the axiomatic principle „Every whole is bigger than its part“, from which one reaches the secondary intelligibles; the third is able to think in actuality whenever it wishes:

*Quibus quidem potentiis triplex proportionatur intellectus, ut materialis nullam habens formam, sed subiectum existens omnis, ut ipsius potentia prima. Est et alius relatus potentiae secundae, ut quando in potentia materiali habentur de intelligibilibus per se nota, ex quibus acceditur ad intelligibilia secunda ex eis nota principia; prima namque sunt propositiones priores per se ad habentem venientes, (quarto Metaphysicae (i. e. Aristotle's)) ceu de quolibet esse aut non esse, ac omne totum maius sua parte. Et hic intellectus est potentialis dictus, ut eius potentia. Tertius quoque est dictus perfectionis intellectus, qui potest actu quando voluerit intelligere. Et hic triplex potest ab Aristotele intellectus potentialis dici<sup>81</sup>.*

The wording of this passage shows that Pietro draws directly on the locus classicus for the doctrine, Avicenna's *De anima*, chapter I,5<sup>82</sup>. Pietro makes two additions, the first of which is less common: He quotes the law of the excluded middle from Aristotle's *Metaphysics* Γ.7 – which, just as the *Omne totum* example, had found its way into the medieval tradition of the *Topics*, the theory

<sup>76</sup> Pietro d'Abano, *Conciliator*, diff. 57, ppt. 1, 83vb–84ra.

<sup>77</sup> As stated already by Nardi, *La teoria dell'anima* ... (as in note 14), 12.

<sup>78</sup> Averroes, *Commentarium magnum* in *De anima* (as in note 22), III.36, 496–501.

<sup>79</sup> See Albertus Magnus, *De anima* (as in note 30), 3.3.11, 222, lines 79–84.

<sup>80</sup> See D. N. Hasse, *Das Lehrstück von den vier Intellekten in der Scholastik: von den arabischen Quellen bis zu Albertus Magnus*, in: *Recherches de Théologie et Philosophie médiévales* 66 (1999), 21–77.

<sup>81</sup> Pietro d'Abano, *Conciliator*, diff. 57, ppt. 1, 83vbG.

<sup>82</sup> Avicenna, *De anima* (as in note 25), I.5, 96–98.

of maxims<sup>83</sup> – and he equates the first three intellects with Aristotle's potential intellect, which is an interpretation of the doctrine common since the 1220s<sup>84</sup>. He proceeds by describing the fourth intellect, the intellect that is thinking in actuality and conjoining with the active intelligence. The separate nature of the latter is explained with two references to Avicenna:

*Quando autem is actu intelligit intelligens se intelligere, intellectus est appellatus in effectum, et tunc sibi coniungitur et unitur intellectus dictus accomodatus ab extrinseco (Avicenna, primo de anima), vel acquisitus ut ab intelligentia, quam posuit (i. e. Avicenna) agentem (Metaphysicae 9). Et ideo intellectum non posuit alium agentem animae partem, sicut neque Plato cum posuerit[is] per se universalia subsistere<sup>85</sup>.*

This last sentence on the similarity in doctrine between Plato and Avicenna reveals one of the more immediate sources of Pietro's, since the explicit linking of Plato and Avicenna is characteristic of Thomas Aquinas. The phrasing is close to Summa theologiae I,84 where Thomas mentions forms flowing upon us „*quas tamen Plato dicit per se subsistere, Avicenna vero ponit eas in intelligentia agente*“<sup>86</sup>. In Thomas' psychology, however, the doctrine of the four intellects does not appear as such; remnants of the tradition are quoted in the explanation of a passage in Aristotle on different kinds of potentialities<sup>87</sup>. In general, the doctrine was much less popular in the second half of the thirteenth century than in the first. The theologians and many masters of arts focused on topics such as the unicity of the possible intellect, universal hylemorphism, and plurality of forms. In the present state of knowledge, it seems that the Parisian masters of arts of Pietro's time bypass the doctrine of the four intellects<sup>88</sup>. Again, Pietro emerges as a careful reader of older sources, rather than of the writings of contemporaries, and as an author with a liking for Peripatetic theories current in the first half of the thirteenth century.

<sup>83</sup> See for instance Petrus Hispanus, Summule logicales, ed. L. M. de Rijk, Assen 1972, tr.V, 59, line 9, and 71, line 15. The „Metaphysics“ reference reappears in John of Jandun, Quaestiones (as in note 17), qu. III.36, 415.

<sup>84</sup> For an early example see Anonymous, De anima et de potentiis eius, ed. R. A. Gauthier, Le Traité „De anima et de potentiis eius“ d'un maître ès arts (vers 1225), in: Revue des Sciences philosophiques et théologiques 66 (1982), 52–53.

<sup>85</sup> Pietro d'Abano, Conciliator, diff. 57, ppt. 1, 83vbH.

<sup>86</sup> Thomas Aquinas, Summa theologiae, prima pars, qu. 84, c.

<sup>87</sup> Thomas Aquinas, Sententia libri de anima, ed. Gauthier (as in note 16), p. 113, lines 225–242.

<sup>88</sup> Anonymous (ed. Vennebusch), Quaestiones (as in note 17), qu. 64, 277–278, lists three intellects (*materialis/possibilis, in habitu/formalis, adeptus*) but does not mention the primary and secondary intelligibles. John of Jandun, Quaestiones (as in note 17), qu. III.36, 415, gives an account very close to Pietro's, but leaves out the intellect names. Pietro himself advances another version of the doctrine in his commentary on the „Problemata“ (as in note 5), part. 14, probl. 1: „*Notandum ergo cum intellectus sit quadruplex apud philosophum ut apparet tertio de anima, puta primorum principiorum quae per se perveniunt ad habentem (quarto Metaphysicae), intellectus agens de quo dictum est quod est omnia facere, ac possibile seu materialis quo est omnia fieri et qua< rto> intellectus passivus ut imaginatio corruptibilis existens, hic omnis potest audiri intellectus et passibilis maxime secundum quod quantum ad ipsius actum ex intellectu dependet passivo: sine enim ipso non est intelligere*“.

What does this tell us about the intellectual milieu of late thirteenth-century Paris? On the one hand, Pietro's difficulties with the Dominican inquisitors remind us that intellectual freedom was seriously threatened and that it was particularly dangerous to express one's opinion freely on the theory of the soul. On the other hand, it tells us something about philosophical currents: much of the philosophical activity in the arts faculty consisted in commenting upon Aristotle, using Averroes as a guide, and in developing and refining the discussion of a standard set of questions that would continue to be raised at least until the late sixteenth century. When put in the context of this philosophical current, Pietro d'Abano appears almost old-fashioned when it comes to the theory of the intellect. With respect to the vegetative and perceiving powers, however, Pietro is exceptionally well informed of the Greek, Arabic and Latin sources, which he usually quotes directly, rather than from an intermediate source – as was common practice among the masters of arts. As a result, he is in a better position to judge the weaknesses and strengths of the Aristotelian theory and to see alternatives.

The specific standpoint chosen by Pietro in the „Conciliator“ is not an Averroist one, as has sometimes been claimed<sup>89</sup>: Averroes is only one of several Peripatetic philosophers used by Pietro, and by no means the leading one. The „Conciliator“'s psychology, as has been shown, owes much more to Avicenna than to Averroes. Marie-Thérèse d'Alverny once argued that the difference between Pietro's natural philosophy and that of the Parisian arts faculty consisted in Pietro being not a philosopher but a physician and an astronomer<sup>90</sup>. Of course, this was a factor. But if Pietro had followed the advice of Avicenna's medical magnum opus, the „Canon“, he would have written only one sentence on vision, leaving the matter to the philosophers, and devoting his attention to ophthalmology<sup>91</sup>. Rather, Pietro's psychology is different because of a specific philosophical choice, namely to continue the tradition of Latin Peripatetic philosophy so admirably mastered by Albertus Magnus<sup>92</sup>.

<sup>89</sup> This was maintained without much argumentation by E. Renan, *Averroès et l'Averroïsme*, Paris 1866, 326–327. It was Ferrari who first tried to furnish evidence for Pietro's alleged Averroism, see his *I tempi, la vita ...* (as in note 14), 347–353. Pietro as Averroist appears, for instance, in M. Grabmann, *Der lateinische Averroismus des 13. Jahrhunderts*, in: *Sitzungsberichte der Bayerischen Akademie der Wissenschaften, Philosophisch-historische Abteilung*, München 1931, 80, and in E. Troilo, *Averroismo e Aristotelismo* Padovano, Florence 1939, 16–21. A more balanced account is given by M. M. Gorce, „Averroïsme“, in: *Dictionnaire d'histoire et de géographie ecclésiastiques* 5 (1931), 1076.

<sup>90</sup> M.-T. d'Alverny, *Pietro d'Abano et les „Naturalistes“ à l'époque de Dante*, in: V. Branca and G. Padoan (eds.), *Dante e la cultura veneta*, Florence 1966, 207–219, esp. 214.

<sup>91</sup> See Avicenna, *Liber canonis*, ed. Venice 1507 (repr.: Hildesheim 1964), lib.1, fen 1, doct. 5, cap. 5, fol. 24rb, and with respect to the anatomy of the eye: *ibid.*, lib. 3, fen 3, cap. 1, fol. 203va.

<sup>92</sup> On this tradition see K. Park, *Albert's Influence on Late Medieval Psychology*, in: J. A. Weisheipl (ed.), *Albertus Magnus and the Sciences*, Toronto 1980, 501–535. – I am very grateful to Charles Burnett, Peter Godman, Danielle Jacquart and the participants of the Tübingen colloquium for helpful criticisms and suggestions.