



**The Debate over the Nature of Motion:  
John Buridan, Nicole Oresme and Albert of Saxony.  
With an Edition of John Buridan's *Quaestiones super  
libros Physicorum, secundum ultimam lectionem,*  
Book III, q. 7**

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**Abstract**

The so-called 'Buridan school' at the University of Paris has obtained a considerable fame in the history of science. Pierre Duhem had made some bold claims about the achievements by John Buridan and his 'pupils' Nicole Oresme and Albert of Saxony in the field of medieval dynamics. Although generally, Duhem's views are no longer accepted, the idea of a 'Buridan school' has survived. This idea is, however, misleading. John Buridan, Nicole Oresme and Albert of Saxony should rather be viewed as members of an intellectual network. While interested in similar philosophical themes and understanding each other's conceptual language, they also disagreed about numerous topics. One case in point is the nature of motion, as discussed in their respective *Questions on the Physics*. Despite the common features of the language in which they discuss motion, the three thinkers defend different positions. This article compares the three sets of *Questions on the Physics* and presents a critical edition of Buridan's "ultima lectura", Book III, q. 7.

**Keywords**

John Buridan, Nicole Oresme, Albert of Saxony, *fluxus formae, forma fluens*, local motion, motion as *aliter et aliter se habere, modus rei*, Buridan school, Pierre Duhem, John Murdoch, Edith Sylla, Bishop Etienne Tempier, Averroes, Aristotle, *Quaestiones super libros Physicorum secundum ultimam lectionem*

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There was no such thing as the Buridan school, and this is a paper about it.<sup>1</sup> At the beginning of the twentieth century, Pierre Duhem (1861-1916) announced the existence of the Buridan school and attributed a pivotal role to it in making science modern. He pushed the origin of modern science back to the fourteenth century and claimed that the University of Paris was its location: “La Faculté des Arts de Paris allait enfanter la Science moderne.”<sup>2</sup> One of his most celebratory statements of the role of Paris and of Buridan can be found in the preface to his *Études sur Léonard de Vinci*. He there went even further and claimed that Christian faith had vanquished both pagan Aristotelianism and Neoplatonism:

Cette substitution de la Physique moderne à la Physique d’Aristote a résulté d’un effort de longue durée et d’extra-ordinaire puissance. Cet effort, il a pris appui sur la plus ancienne et la plus resplendissante des universités médiévales, sur l’Université de Paris. Comment un parisien n’en serait-il pas fier? Ses promoteurs les plus éminents ont été le picard Jean Buridan et le normand Nicole Oresme. Comment un français n’en éprouverait-il pas un légitime orgueil? Il a résulté de la lutte opiniâtre que l’Université de Paris, véritable gardienne, en ce temps-là, de l’orthodoxie catholique, mena contre le paganisme péripatéticien et néoplatonicien. Comment un chrétien n’en rendrait-il pas grâce à Dieu?<sup>3</sup>

Elsewhere, Duhem created a link between John Buridan and his ‘disciples’ Nicole Oresme and Albert of Saxony, at times including Themon Judaeus and Marsilius of Inghen as well:

Le philosophe de Béthune [i.e., John Buridan] n’est pas seul à professer cette Dynamique; ses disciples les plus brillants, les Albert de Saxe, et les Nicole Oresme, l’adoptent et l’enseignent; les écrits français d’Oresme la font connaître même à ceux qui ne sont pas clercs.<sup>4</sup>

<sup>1</sup> The opening sentence is inspired by Steven Shapin, *The Scientific Revolution* (Chicago, 1996), 1.

<sup>2</sup> Pierre Duhem, *Le système du monde. Histoire des doctrines cosmologiques de Platon à Copernic*, 10 vols. (Paris, 1913-1959), IX:697.

<sup>3</sup> Pierre Duhem, *Études sur Léonard de Vinci. Ceux qu’il a lus et ceux qui l’ont lu*, 3 vols. (Paris, 1906-1913), 3:xiii-xiv. This passage is also quoted in English translation in H. Floris Cohen, *The Scientific Revolution. A Historiographical Inquiry* (Chicago, 1994), 53.

<sup>4</sup> Duhem, *Études sur Léonard de Vinci*, 3:viii.

In his view, these thinkers together constituted the Buridan school, which advocated a brand of French positivism.<sup>5</sup>

In an important article, published in 1991, John Murdoch examined the crucial role of Duhem's work in shaping the historiography of medieval science, either by extension or by criticism. He demonstrated how Duhem's claims and the wealth of sources which he made available in French translation set the research agenda for historians of the next four decades or so.<sup>6</sup> In addition, John Murdoch's analysis illustrated that, as a matter of fact, Duhem's thesis contained at least four different ingredients. Only one of these concerned the claim that Buridan's mechanics was the larva which had been turned into adult form by Galileo Galilei. Or, in other words, that the essence of seventeenth-century science was already there in the fourteenth century.<sup>7</sup>

Many historians of science and philosophy have felt uneasy with Duhem's interpretation of fourteenth-century natural philosophy as an anticipation of seventeenth-century mechanics. Early critics such as Anneliese Maier and Marshall Clagett believed that Duhem's views were not justified by the medieval sources.<sup>8</sup> However, the 'Buridan school' had been born, for even Maier and Clagett did not question its existence and considered it the most prominent center of medieval science, together with the school of Bradwardine at Merton College.

In a previous article I have argued that there are neither institutional nor doctrinal reasons to conclude that there ever existed a Buridan school. Nicole Oresme and Albert of Saxony were not Buridan's students in any formal sense of the word. They belonged to different nations, whereas students usually took their degrees with masters of their own nation. In the case of Albert of Saxony, we

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<sup>5</sup> See further, for instance, Duhem, *Système du monde*, VI:729.

<sup>6</sup> John E. Murdoch, "Pierre Duhem and the History of Late Medieval Science and Philosophy in the Latin West," in *Gli studi di filosofia medievale fra otto e novecento*, eds. Ruedi Imbach and Alfonso Maierù (Rome, 1991), 253-302.

<sup>7</sup> Duhem, *Système du monde*, VIII: 200: "La Mécanique de Galilée, c'est, peut-on dire, la forme adulte d'une science vivante dont la Mécanique de Buridan était la larve." See also Murdoch, "Pierre Duhem," 256-257.

<sup>8</sup> Murdoch, "Pierre Duhem," 274-279.

even know that he took his degree in 1351 under master Albert of Bohemia.<sup>9</sup> Moreover, the works by John Buridan, Nicole Oresme, and Albert of Saxony have, so far, not shown the type of unified doctrinal position which is usually taken as a characteristic of a school orthodoxy. In this respect, the so-called Buridan school is in stark contrast with, for instance, the Thomist or Scotist schools. For these reasons, it is time to depart from the traditional way of thinking about a Buridan school, and to try instead to picture it as an intellectual network or community. Its organizational base was the arts faculty at Paris. The university and the church supplied the social and material conditions for the existence of this network. At a micro-level, the contemporaneous intellectuals of this network engaged in specific social activities, such as lecturing on Aristotle's texts and discussing. They were focused on their own arguments, philosophical disagreements and conceptual language.<sup>10</sup> Their intellectual rivalry and opposition were focused on certain topics, such as, for instance, the ontological status of quantity.<sup>11</sup> At the time, however, there was a fair amount of doctrinal agreement and of shared interest in certain philosophical issues and texts, in particular Aristotle's *Physics*.<sup>12</sup> Precisely this aspect of intellectual networks may have led previous historians to believe that there was a school of followers, clustered around a leader, John Buridan. Another factor may have been that previous scholars did not have the benefit

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<sup>9</sup> Henri Denifle and Émile Chatelain, eds., *Auctarium Chartularii Universitatis Parisiensis*, vol. I (Paris 1894), 149, 150 and 152 and further Johannes M.M.H. Thijssen, "The Buridan School Reassessed, John Buridan and Albert of Saxony," *Vivarium* 42 (2004), 18-42, esp. 21, and 23-25.

<sup>10</sup> Interesting sociological observations about intellectual networks can be found in Randall Collins, *The Sociology of Philosophies. A Global Theory of Intellectual Change* (Cambridge, Mass., 1998), esp. 1-15 and 51-53. Collins' analysis of the "Paris Network" on 490-492 is outdated.

<sup>11</sup> Thijssen, "Buridan School Reassessed," esp. 29-38 discusses the rival positions which John Buridan and Albert of Saxony took in the debate about quantity.

<sup>12</sup> This aspect is nicely brought out in Edward Grant's study of fourteenth-century commentaries on Aristotle's *De caelo*. From his inventory and analysis of question-titles it is clear that some masters at the arts faculty had shared philosophical interests, though not necessarily adhering to the same views. Edward Grant, *Planets, Stars and Orbs. The Medieval Cosmos, 1200-1687* (Cambridge, 1994).

of the critical editions of some of the crucial texts, which can now be studied from this new perspective.

In this paper I will attempt to give some more substance to the idea that John Buridan, Nicole Oresme, and Albert of Saxony constituted an intellectual community or network, rather than a school. One of the topics that attracted the attention of this community was the nature of motion. In their question-commentaries on Aristotle's *Physics*, all three thinkers are engaged in a debate about the question what motion really is. The dating of their commentaries is elusive. Elsewhere, I have suggested that Albert of Saxony's *Quaestiones* on the *Physics*, has to be placed inbetween John Buridan's so-called *tertia lectura* and the *lectura ultima* of his *Quaestiones* on the *Physics*. Albert knew Buridan's *tertia lectura*. Buridan, in his turn, responded to Albert's text in his own *ultima lectura*, written after the *tertia lectura*.<sup>13</sup> This relative chronology, based on doctrinal analysis and text comparisons, finds support in independent evidence about the tentative dates of origin of these works. Buridan's *tertia lectura* is dated around 1350, whereas the *ultima lectura* was composed sometime between 1352 and 1357.<sup>14</sup> Albert of Saxony's *Quaestiones super libros Physicorum* are to be dated after 1351. This date is suggested by one of its copies, whose introductory remarks tie the text to Albert's opening lecture (*principium*) on Aristotle's *Physics*.<sup>15</sup> Since Albert of Saxony incepted in the summer of 1351,

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<sup>13</sup> Thijssen, "Buridan School Reassessed, 40-42. This relationship was previously suggested by Jürgen Sarnowsky, *Die aristotelisch-scholastische Theorie der Bewegung. Studien zum Kommentar Alberts von Sachsen zur Physik des Aristoteles* (Aschendorff, 1989), 50-51, and 58-60.

<sup>14</sup> The evidence concerning the dates of composition of Buridan's two question-commentaries on the *Physics* was already known to Edmond Faral and Anneliese Maier. See further Johannes M.M.H. Thijssen, *John Buridan's Tractatus de infinito, Quaestiones super libros Physicorum secundum ultimam lectionem, liber III, quaestiones 14-19. An Edition with an Introduction and Indexes* (Nijmegen, 1991), xx-xxi and Bernd Michael, *Johannes Buridan: Studien zu seinem Leben, seinen Werken und zur Rezeption seiner Theorien im Europa des späten Mittelalters*, 2 vols., (Ph.D. dissertation, Freie Universität Berlin, 1985), 2:606-608.

<sup>15</sup> It is the manuscript Erfurt, Wissenschaftliche Allgemeinbibliothek, F. 345, which was written in 1360 in Cologne. Its *incipit* reads as follows: "Quoniam dicit Philosophus 'a communibus et prioribus prius est inchoandum', ideo propter informationem

it seems that the *Quaestiones* on the *Physics* was the first work that he read at Paris after the completion of his studies there. Nicole Oresme's *Quaestiones* on the *Physics* are dated around 1347. This date is based on an argument *ex silentio*: after John of Mirecourt's condemnation in 1347 which appeared to include the very characteristic theory of *modi rerum* (about which more below), Oresme seems to have abandoned it.<sup>16</sup> It is likely that Albert of Saxony used Oresme's *Quaestiones* on the *Physics* in his own commentary on that text.<sup>17</sup>

### What Kind of Entity is Local Motion?

In a seminal paper of 1978, John Murdoch and Edith Sylla pointed out that in the Middle Ages there was no "science of motion" as a separate discipline, in contradistinction to, say, optics or alchemy.<sup>18</sup> Motion and change play such a crucial role in Aristotle's definition of nature that the medieval "science of motion" would actually

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intuicionemque iuvenum scolarium in isto primo libro *tanquam pro principio meo* volo istam questionem disputare: Utrum scientia...." See Sarnowsky, *Die aristotelisch-scholastische Theorie der Bewegung*, 18-19, and 49. The text may even imply that the first *quaestio* harks back to Albert's *principium*.

<sup>16</sup> See Stefan Kirschner, *Nicolaus Oresmes Kommentar zur Physik des Aristoteles* (Stuttgart, 1997), 29. An important qualification has been added in Stefano Caroti, "Les modi rerum'... encore une fois. Une source possible de Nicole Oresme: le commentaire sur le livre 1er des *Sentences* de Jean de Mirecourt," in *Quia inter doctores est magna dissensio. Les débats de philosophie naturelle à Paris au XIV<sup>e</sup> siècle*, eds. Stefano Caroti and Jean Celeyrette (Florence, 2004), 195-223. There, Caroti demonstrates that Mirecourt's 1347 condemnation was actually not aimed against the theory of *modi rerum*, but that it was merely implied, because Mirecourt mentioned it in his commentary on the *Sentences*. Thus, the theory came to be included in the condemned excerpts (*articuli*).

<sup>17</sup> Jürgen Sarnowsky, "Nicole Oresme and Albert of Saxony's Commentary on the Physics. The Problems of Vacuum and Motion in a Void," in *Quia inter doctores est magna dissensio*, eds. Caroti and Celeyrette, 161-175.

<sup>18</sup> John E. Murdoch and Edith Sylla, "The Science of Motion," in *Science in the Middle Ages*, ed. David C. Lindberg (Chicago, 1978), 206-265. Note that chapter 3 ("The Philosophical Setting of Medieval Science") by William A. Wallace in the same volume, refers to "Buridan's pupils Albert of Saxony and Nicole Oresme" (113).

coincide with Aristotelian natural philosophy.<sup>19</sup> Hence, rather than discussing the whole of medieval natural philosophy, the authors confined themselves to certain areas regarding motion and change. One of the topics singled out was the problem of the nature of motion, which was of major concern to late medieval thinkers.<sup>20</sup>

As is well known, Aristotle had made contradictory statements concerning the ontological status of motion. In *Physics*, book III (200b32-201a10) he maintained that motion is not something over and above the things in motion. In other words, motion does not constitute a separate category, but belongs to the same category as what is gained by motion, i.e. the category of Place in the case of local motion.<sup>21</sup> In the *Categories* (11b1-8), however, Aristotle had claimed that motion fell into the category of *passio* or Affection.

Averroes tried to reconcile these incompatible statements by pointing out that in the *Physics*, Aristotle had set forth the more correct view, whereas in the *Categories*, he had maintained the more common view. Averroes's explanation of Aristotle's view hinges on an analysis of motion from two different perspectives. Motion, if considered from the terminus toward which it tends, only differs from it in its degree of "more or less," i.e. in its degree of perfection. If, however, motion is considered as a process (*via*) towards perfection or actuality, and, as a consequence, is different from the perfection it attains, it belongs to a category of its own. When seen as a road towards actuality, motion cannot coincide with that actuality.<sup>22</sup> The same twofold analysis of motion recurs in Averroes's commentary

<sup>19</sup>) Aristotle, *Physics* 192b9-193a30.

<sup>20</sup>) In addition to the section in Murdoch and Sylla, "Science of Motion," 213-218, see especially Anneliese Maier, *Zwischen Philosophie und Mechanik* (Rome, 1958), esp. 61-143; Cecilia Trifogli, *Oxford Physics in the Thirteenth Century (ca. 1250-1270). Motion, Infinity, Place and Time* (Leiden, 2000), esp. 37-86, and further Johannes M.M.H. Thijssen, "The Nature of Change," in *The Cambridge History of Medieval Philosophy*, ed. Robert Pasnau, forthcoming.

<sup>21</sup>) In this paper, I will restrict myself to the medieval discussion of local motion (*motus*). Aristotle at times uses *kinêsis* (translated as *motus* in the Middle Ages) to cover change in general, and sometimes in the more restricted sense of motion, i.e., local motion.

<sup>22</sup>) Averroes, *Physica in Aristotelis Opera cum Averrois Commentariis*, IV (Venice, 1562-1574; reprinted Frankfurt, 1962), bk. III text 4, f. 87ra-b.

on *Physics* V. There it is couched in the terminology of change “according to matter” and “according to form.” According to matter, change and its terminus belong to the same category; according to its form, one must view change as a transmutation that takes place in time and constitutes a category of its own, namely that of Affection (*passio*).<sup>23</sup>

In the thirteenth and fourteenth centuries, these alternative analyses of motion came to be captured under the formulas *forma fluens* and *fluxus formae*, a distinction that medieval authors usually attributed to Albert the Great.<sup>24</sup> According to the *forma fluens* theory, change is nothing but the form successively gained by the changeable body. In the case of local motion, the *forma fluens* is the place successively attained by the mobile body. In other words, motion is the same as the perfection or form it acquires, but it represents that form in a state of flux. It is important to note that the flowing character of the form is not posited in the form itself, but results from the degree of actualization of the form in the subject. Thus, the view of motion as *forma fluens* did not contradict the common medieval view that forms are unchangeable.<sup>25</sup> The *fluxus formae* theory, on the other hand, maintained that change is not the form acquired but is “the flux” of that form— that is, the flow, the process, or the road towards an actuality or perfection. These distinctions lay, at least implicitly, in the background of fourteenth-century discussions of Aristotle’s statement that there is no change over and above real things.

Albert of Saxony provides a nice starting-point for mapping this debate. In book III, of his *Questions on Aristotle Physics*, he discusses whether local motion involves the existence of a flux (*fluxus*)

<sup>23</sup> Averroes, *Physica*, Bk.V, text 9, f. 215ra.

<sup>24</sup> *Alberti Magni Opera Omnia, Physica. Pars I, Libri 1-4*, ed. P. Hossfeld (Münster, 1987), bk. III, tr.1 c.3, 151. See further Maier, *Zwischen Philosophie und Mechanik*, 73-77 and E.J. McCullough, “St. Albert on Motion as Forma Fluens and Fluxus Formae,” in *Albertus Magnus and the Sciences, Commemorative Essays 1980*, ed. J.A. Weisheipl (Toronto, 1980), 129-153, for a discussion of Albert’s views and of Maier’s interpretation thereof.

<sup>25</sup> See Maier, *Zwischen Philosophie und Mechanik*, 78-83.

which is distinct from the mobile object and the place.<sup>26</sup> Interestingly, Albert divides his discussion over two questions, one dealing with the views of Aristotle and Averroes (III, q. 6), the other (q. 7) dealing with the view according to faith and the truth (*secundum nostram fidem et secundum veritatem*). Both questions are intertwined in that certain arguments from q. 6 are only resolved at the end of q. 7.<sup>27</sup>

Albert's discussion of the views of Aristotle and Averroes is embedded in a systematic survey of the several different interpretations that were circulating. Apparently, some thinkers believed that Aristotle and Averroes adhered to a *fluxus* theory; others believed that they did not hold a *fluxus* theory: *motus non est fluxus*. Albert himself is an advocate of the latter opinion. He too believes that according to Aristotle and Averroes nothing more than mobile body and place are required to account for local motion. However, if motion is not a flux additional to the mobile thing and the place, what, then, is it? Albert reviews two different descriptions of local motion, before offering his own. According to one description, being locally moved (*localiter moveri*) involves "continuously being in another way than before with respect to another body" (*continue se habere aliter et aliter ad unum aliud corpus*). This description of local motion, however, is inadequate, because it fails to distinguish between bodies that are at rest and bodies that are in motion. For if a mobile body moves in relation to a body which is at rest, the body at rest too is in another way than before with respect to another body, namely precisely with respect to the body that is really moving.<sup>28</sup>

Others claim that being locally moved implies "being in another place than before" (*fiat in alio loco quam prius*). However, this description too is inadequate, according to Albert, for God could cause a body to be in one place, and then in another place without any

<sup>26</sup> Albert of Saxony, *Expositio et Quaestiones in Aristotelis Physicam ad Albertum de Saxonia attributae*, ed. Benoît Patat, 3 vols. (Louvain-La-Neuve, 1999), 2:501-520.

<sup>27</sup> The section *ad rationes* at the end of q. 7; Albert of Saxony, *Expositio et Quaestiones*, 2:519, ll. 20-52 provides the resolution of the six arguments *in oppositum* put forward in q. 6, on 506 l. 78—507, l.12.

<sup>28</sup> *Ibid.*, 508, ll. 24-31.

local motion taking place (for instance, by creating a body in one place and then putting it in another place).<sup>29</sup>

According to Albert, the correct interpretation of Aristotle's and Averroes's view on local motion entails that a mobile body "continuously and successively is in another and another place" (*continue et successive esse in alio et alio loco*). This description is derived from a more general description of being moved (*moveri*) as "being continuously in another way than before" (*continue aliter et aliter se habere quam prius*). Note that Albert's own interpretation of Aristotle and Averroes is a subtle modification of the two rejected descriptions of local motion. Positing an additional flux is not necessary. Local motion is not essentially different from alteration, a type of change which only involves the mobile body and the forms successively acquired or lost.<sup>30</sup>

An important objection against Albert's interpretation is that it does not seem to apply to the motion of the last sphere of the heaven. Since the last sphere is not surrounded by another body, and hence is not in a place, it could not be in motion according to the description advocated by Albert. He responds to this instance by pointing out that the last sphere, indeed, does not move locally in its totality (*secundum se totam collective sumptam*). It does move locally, however, with respect to its parts (*ratione suarum partium*), because they are continuously in another and another place.<sup>31</sup>

The local movement of the last sphere, and even of the entire universe, recurs in the next question (book III, q. 7). As a matter of fact, this question is entirely devoted to a consideration of the divine case that God would turn the universe into one continuous body and rotate it from East to West, or in some other way. In that case, local motion would, indeed, lack an external point of reference. So, if the universe moves, i.e. continuously is in another way than before, it can only be so because of something that is intrinsic to the mobile body and yet distinct from it. Albert concludes

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<sup>29</sup>) Ibid., 508 l. 33: "Sed breviter ambo isti modi dicendi deficiunt." The refutation follows on 508 ll. 33-509, l. 44.

<sup>30</sup>) Ibid., 508, ll. 18-23 and 509, ll. 45-510, l. 66.

<sup>31</sup>) Ibid., 510, ll. 67-511, l. 80.

that this element which inheres in the mobile body is a flux or the motion itself, which the mobile body successively acquires.<sup>32</sup> Precisely as a flux, the universe's relation to it can be described as continuously being in another way than before (*aliter et aliter se habere*).

The same position was defended by John Buridan. He too believes that local motion is a flux intrinsic to the mobile body. Buridan develops his position in both question-commentaries on the *Physics*, in the *tertia lectura* (book III, q. 7) and in the *ultima lectura* (book III, q. 7). The differences between the two versions are minimal. The same arguments of the *tertia lectura* recur, in the same order, if not in the same wording, in the *ultima lectura*.<sup>33</sup> In other questions, the differences between the two versions can be substantial.<sup>34</sup>

An interesting contrast with Albert's discussion is that Buridan is totally unconcerned with the correct interpretation of Aristotle and Averroes on the nature of motion. At the opening section of his own solution, he merely observes that the "philosophers of old" (*antiqui*) held no doubts about this question (i.e. the nature of motion). They unanimously agreed that local motion was different from the mobile body and the space traversed.<sup>35</sup> If Buridan includes

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<sup>32</sup> Ibid., 517, ll. 66-68: "Septima conclusio: in omni mobili quod movetur localiter, volentes admittere casus divinos oportet ponere fluxum seu motum inhaerentem mobili qui successive illi mobili acquiritur."

<sup>33</sup> I have checked the *tertia lectura* in the ms. Vat. Chig. E VI 199, fols. 43rb-44va against the edition of the *ultima lectura*, given below. One exception is the mention of two probabilities by which Buridan supports his main thesis: "Et pro confirmatione praedictorum possunt adduci aliquae probabilitates..." This passage was dropped in the *ultima lectura*. Another difference is the brief introductory phrase to Buridan's own solution (*determinatio*): "Ista quaestio reputatur valde difficilis et tenent moderni quod motus non sit res vel dispositio alia a mobili et loco vel aliis a duobus simul. Tamen contrarium videtur mihi." These differences were already noted by Maier, *Zwischen Philosophie und Mechanik*, 127-128.

<sup>34</sup> Thijssen, "Buridan School Reassessed," 29-42 discusses the differences between the two versions with respect to quantity and impetus theory.

<sup>35</sup> See the edition below, p. 205: "Antiquiores non dubitaverunt de ista quaestione, sed concorditer concesserunt motum localem esse aliam rem a mobili et loco, sed iam posteriores moderni propter rationes praedictas posuerunt quod motus non sit alia res a mobili." Note the contrast with Buridan's *tertia lectura* cited in the previous note,

Aristotle and Averroes among these *antiqui*, he is contradicting Albert's assessment of their views. In any case, he too believes that local motion is a separate entity and thus disagrees with some *posteriores moderni*, some more recent contemporaries.

In order to bring out the true nature of local motion, Buridan invokes God's power to move the universe. He couches his appeal to God's omnipotence in a reference to Tempier's condemnation, in particular to article 49.<sup>36</sup> If it is conceded that God could indeed move the universe in rectilinear or circular motion, how should one imagine this movement? Buridan's answer is clear: by admitting that motion is a quality inhering in the mobile body.<sup>37</sup> In both his question commentaries, John Buridan defends that local motion is a flux intrinsic to the mobile body. More explicitly than Albert, Buridan characterises this flux as a quality or property of a mobile being, but of such a nature that it is purely successive. He believes that motion is a property, such as whiteness, and thus can maintain that supernaturally speaking there can be motion without anything moving, just as there can be whiteness without a white object.<sup>38</sup> In other words, accidents can exist independently, if God so wishes.

But can there be local motion without the existence of space (*locus*)? At first sight, it seems that the local motion of the universe is something of a contradiction. The universe is not *located* in a space (*locus*), and yet can move *locally*. Buridan explains that the phenomenon of local motion is grounded in perception. In the common course of nature we perceive that a thing moves, because

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which contains no reference to the views of *antiqui*. Was this reference induced by Albert of Saxony's discussion of Aristotle and Averroes?

<sup>36</sup> See Roland Hissette, *Enquête sur les 219 articles condamnés à Paris le 7 mars 1277* (Louvain, 1977), 118.

<sup>37</sup> See Buridan's text which is edited below. Another passage in which Buridan indicates that 'being in motion' is an accident of the mobile body, comparable to 'whiteness' is quoted by Maier, *Zwischen Philosophie und Mechanik*, 129: "...Nos autem dicimus quod omnis motus est subiective in mobili, scilicet in eo quod movetur, per realem inhaerentiam, sicut albedo esset in pariete."

<sup>38</sup> See the edition, p. 210: "<2> Ad aliam dico quod non plus reputarem impossibile quod esset motus et nihil moveretur vel mutaretur, quam quod esset albedo et nihil esset album. Neutrum est possibile naturaliter, et utrumque est possibile supernaturaliter."

there is a reference object with respect to which the motion takes place. Thus, we do not perceive the local motion of the universe, nor the movement of a boat next to another boat of the same velocity.<sup>39</sup>

As mentioned above, Albert of Saxony was familiar with Buridan's question-commentary. It is plausible that he derived the consideration about God's omnipotence to move the universe from Buridan's *tertia lectura* and found the argument compelling. However, Albert provides this argument with a new context. He was quite satisfied with Aristotle's and Averroes's view that motion is *not* a flux, if motion is described in the right way, i.e. as continuously and successively being in another and another place. Even the local motion of the last heavenly sphere (which is not situated in a place), can be accounted for and does not require the assumption of an additional flux which inheres in the mobile body. When seen from the perspective of Aristotle and Averroes, local motion is not different from alteration. Both types of change can be described as *forma fluens*: in the case of alteration as the successive impression of a quality (for instance, heat) upon the changeable body, and in the case of local motion as the successive acquisition of various places by the mobile body. If, however, one introduces Buridan's consideration of God's motion of the entire universe into the debate, Albert apparently is convinced to accept the flux theory. Alteration

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<sup>39</sup> See the text below, p. 210: "Sed de hoc quod dicitur, quod implicat contradictionem esse motum localem et non esse locum, ego dico quod motus ultimae sphaerae vel navis in fluvio non dicitur localis quia necesse sit quod secundum illum mutetur locus, sed quia secundum communem cursum naturae omne quod movetur illo loco variat de facto habitudinem localem vel situlem ad aliquod aliud. Et omnino ille motus quem vocamus localem potest non esse localis, quia nullus mutaretur locus nec situs ad aliquam aliam rem, sed tunc non possem illum percipere. Non ergo vocatur motus localis, quia ad ipsum sit locus necessarius, sed quia percipi non potest nisi apparet mutatio loci vel situs rei ad aliam rem; unde existentes in navibus in mari velociter et simul motis non percipiunt quod illae moveantur." The point about the perception of motion in two moving boats, also occurs in Oresme. See Stefano Caroti, "La position de Nicole Oresme sur la nature du mouvement (Quaestiones super Physicam III, 1-8): Problèmes gnoséologiques, ontologiques et sémantiques," *Archives d'histoire doctrinale et littéraire du moyen âge* 61 (1994), 303-385, esp. 317 n. 51, and 314-320 for a discussion of the perception of motion according to Oresme.

and local motion can no longer be considered the same type of change, because the possible local motion of the universe requires the acceptance of a distinct flux. In other words, for theological reasons, Albert shifts to a flux theory of motion, and this flux is explained in the same way as Buridan, i.e. as an inherent quality of the mobile object.

Where now does Oresme fit into this debate? In his question commentary on Aristotle's *Physics*, Oresme devotes book III, qq. 2-7 to a discussion of the nature of motion.<sup>40</sup> He examines five different views, before presenting his own theory. In his overview, Oresme presents himself as an advocate of the *fluxus* theory. Yet, his view of the nature of *fluxus* is entirely different from that of Buridan and Albert of Saxony. He rejects the idea that the *fluxus* is an inherent quality, such as a form. He disqualifies this interpretation of *fluxus* as "the worst possible view" (*omnium pessima*). How then should the fluxus be understood? Oresme introduces a new ontological entity, the *modus rei* or way of being, to explain the phenomenon of motion. Motion is nothing but the mode or condition of the mobile object, i.e., its condition of traversing spaces in succession. The successiveness of the mobile body, however, should not be taken in the sense of a successive thing (*res successiva*) that is distinct from it.<sup>41</sup>

<sup>40</sup> I have used the edition in Kirschner, *Nicolaus Oresmes Kommentar*. In the apparatus, this edition indicates when it diverges from the edition in Caroti, "Position de Nicole Oresme," 303-385.

<sup>41</sup> The crucial texts are Kirschner, *Nicolaus Oresmes Kommentar*, 228, ll. 90-94: "Ex predictis potest elici quinta opinio, scilicet quod motus est res successiva distincta simpliciter a permanentibus. Et potest dupliciter intelligi: primo quod sit una res inherens significabilis incomplexa, sicut una forma, et sic non est verum; secundo quod sit condicio vel modus ipsius mobilis, et sic est verum," and further 234, ll. 147-156: "Alia, que ponit quod est fluxus ad modum unius forme distincte, sicut esset albedo vel anima vel aliquod tale, est omnium pessima; tamen, si intelligatur quod non sit talis forma vel talis res, sed modus vel condicio ipsius mobilis, tunc est verissima et probabilior et facilius inter omnes et concordat dictis Aristotelis et philosophorum." The refuted view resembles that of Buridan. See also Caroti, "La position de Nicole Oresme," 315. Note that Buridan compared 'being in motion' to accidents such as 'whiteness,' a view explicitly rejected by Oresme. See the text cited in note 37.

Oresme determines being moved (*moveri*) as continuously being in another way than the mobile object was before. Like Buridan and Albert, he insists that the mobile body is in another way with respect to *itself*, not in relation to an external point of reference. The considerations which lead Oresme to this description of motion sound familiar and rely on an analysis of the circular motion of the heaven and on alteration. If there were only one body, so Oresme argues, it could not move in a circular motion, unless one assumes that it is in another way than before with respect to itself. The same holds true for alteration, such as, for instance, the heating of water. The body in which the change takes place, is in another way than before with respect to itself.<sup>42</sup>

### **Conclusion: An Intellectual Community in Fourteenth-century Paris**

Ideas do not beget ideas. Rather, they come into existence as a result of interaction between thinkers who are connected in intellectual communities. One of the characteristics of such an intellectual community is the gradual evolution of its own conceptual framework and the perspective it provides on its own problems and arguments.

The debate about the nature of motion suggests that John Buridan, Nicole Oresme and Albert of Saxony were members of such an intellectual community. Their discussion of the nature of motion

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<sup>42</sup> Oresme reviews five different descriptions of “being in motion” (*moveri*). Only the fifth and last one has his approval: Kirschner, *Nicolaus Oresmes Kommentar*, 231, ll. 37-43: “Quinta est descriptio melior et vera quod ‘moveri’ est ‘aliter se habere continue quam ipsum mobile prius se habebat respectu sui et non respectu cuiuscumque extrinseci,’ et illa probatur, quia, si esset unum solum corpus, non videtur quin posset moveri circulariter, et sic non se haberet aliter quam prius nisi respectu sui ipsius, et ita de alteratione quod, si non esset nisi unum corpus, adhuc posset alterari et corrumpi, sicut aqua calefacta, et ad nihil aliud aliter se haberet.” From what follows, it is clear he was thinking of the heaven (*caelum*) and the cosmos (*orbis*). See ll. 52-54: “Ad secundum concedo quod partes talis mobilis, sicut partes celi et unius orbis, continue una se haberet ad aliam uno modo, non tamen ad se ipsam, nec similiter totum, et hoc satis patet de celo.”

was cast in a shared conceptual framework. Being in motion was described as *aliter et aliter se habere quam prius*, and as *fluxus*. The crucial issue in the debate came to be whether the local motion of the universe is comparable to other types of change, such as alteration. Yet within this general framework, these thinkers took rival positions. Buridan and Albert of Saxony agreed that the *fluxus* character of motion should be interpreted as an inherent quality or disposition (*dispositio*) of the mobile object. Although Oresme describes 'being in motion' with a term that seems to approach *dispositio*, namely *condicio* or *modus*, his interpretation is completely different. In his view, 'being in motion' is a state of being of the mobile thing, but adds nothing to it. As a matter of fact, in Oresme's interpretation the *fluxus* is almost turned into a *forma fluens* theory. This theory also receives much sympathy from Albert of Saxony. According to him, the *forma fluens* theory was the theory genuinely advocated by Aristotle and Averroes. Albert only gave it up for the *fluxus* theory because he found Buridan's arguments concerning God's omnipotence compelling. With more evidence culled from the commentaries on the *Physics* by John Buridan, Albert of Saxony and Nicole Oresme, and from other texts as well, we should eventually be able to map the inner structure of this intellectual community in fourteenth-century Paris.

## The Edition

In Book III, q. 7 of his *Quaestiones super libros Physicorum, secundum ultimam lectionem*, John Buridan discusses the nature of motion. The text has not been edited before. Excerpts of the text were transcribed and included by Anneliese Maier in her discussion of John Buridan's views.<sup>43</sup> Maier used the old printing of Paris 1509 making corrections on the basis of the manuscripts Vat. Lat 2163 and 2164.

The present edition of Buridan's *quaestio* is based upon the manuscript København, Det Kongelige Bibliotek, Ny kongelig Samling, cod. 1801 fol. (C). The Copenhagen manuscript has been fully

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<sup>43</sup> Maier, *Zwischen Philosophie und Mechanik*, 121-130.

collated with the manuscript Cracow, Biblioteka Jagiellońska, cod. 1771 (G). The text transmitted in C has been retained throughout. The use of the subjunctive in C is careless, or in any case, not according to classical usage. Yet it has not been corrected, except when readings of C are manifestly corrupt, in which case they have been corrected by G. The choice of C and G as base manuscripts for this edition is based on the analysis of the textual tradition and circulation of Buridan's *Quaestiones*.<sup>44</sup>

Punctuation and division into paragraphs are according to current usage. The spelling has been homogenized according to classical standard orthography (as, for instance, codified in the *Oxford Latin Dictionary*). The medieval *e* for *ae* has not been retained, and *u* and *v* have always been distinguished. Variant readings of the type *igitur/ergo*, *ille/iste*, *item/iterum* have not been reported in the critical apparatus.

There is repeated evidence to the effect that either the scribe of C had access to readings of other manuscripts, or that the manuscript was corrected. Occasionally, C notes that another witness gives an alternative reading. These references are introduced in the margin by the letters 'al' [*alia lectio*]. All these instances are included in the critical apparatus. Quite frequently, the scribe or corrector of C made corrections by way of deletions, interlinear, and marginal corrections. In those instances, the corrected reading of C has been taken into consideration for the edition, without indicating that this reading has been subject to correction.

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<sup>44</sup> The results of the examination of the textual tradition of John Buridan's *Quaestiones super libros Physicorum, secundum ultimam lecturam* (transmitted in 32 manuscripts), have so far been presented in Johannes M.M.H. Thijssen, *John Buridan's Tractatus de infinito* (Nijmegen, 1991) and Dirk-Jan Dekker, *De tijdfilosofie van Johannes Buridanus (d. ca. 1360). Een historisch-wijsgerige studie met editie van Buridanus' Quaestiones super octo libros Physicorum Aristotelis (secundum ultimam lecturam), IV, 12-16* (Ph.D, dissertation, Radboud University Nijmegen, 2003). The textual transmission will also be discussed in the Introduction to the forthcoming edition of books III and IV of John Buridan's *Quaestiones super libros Physicorum, secundum ultimam lecturam*.

<Quaestio 7. Utrum motus localis est res distincta a loco et ab eo quod localiter movetur>

Quaeritur septimo<sup>1</sup> utrum motus localis est res distincta a loco et ab eo quod localiter movetur.

<Arguitur quod non>

<1> Arguitur quod non, quia si totum potest salvari sine re addita mobili et loco, frustra illa poneretur,<sup>2</sup> et hoc est inconveniens; sed sine hoc possunt salvari. Probatio: quia esset motus localis si continue a mobile esset supra aliam et aliam partem spatii *b*, licet non poneretur aliud esse, et salvaretur successio et prioritas et posterioritas per diversas partes spatii quae secundum situm habent ordinem et positionem circumscripto alio addito.

<2> Item. Sequeretur quod Deus potest separare et separatim conservare motum sine mobili et loco, immo ipsis annihilatis, quod videtur inconveniens, quia tunc esset motus et nihil moveretur.

<3> Item. Quomodo intenderetur velocitas motus, cum non remaneat pars prior cum posteriore? Et tamen sic debet fieri intensio, scilicet per additionem partis ad partem remanentem in eodem subiecto.

<4> Item. Commentator et alii ponunt quod motus est de essentia termini ad quem,<sup>3</sup> et in motu locali terminus ad quem non est nisi locus qui acquiritur; ergo motus localis est de essentia loci.

<5> Item. Potest argui quod motus non esset. Sed hoc dictum est in alia quaestione,<sup>4</sup> ideo dimitto.

<Oppositum>

<1> Oppositum arguitur, quia nec esse loci nec esse mobilis consistit in fieri, immo utrumque est perfecte factum, nisi sit aeternum; sed esse motus localis vel temporis consistit in fieri aliud post aliud; ergo esse<sup>5</sup> motus non |# est esse loci, vel eius quod movetur;

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1 quaeritur septimo] septimo quaeritur consequenter G. 2 poneretur] ponere-  
rentur C. 3 Averroes, *In Physicam*, VI, comm. 48, F. 4 Johannes Buridanus, *Quaestiones super libros Physicorum*, III, q. 6. 5 esse] ille C. # 72vb.

ergo non est de essentia alicuius eorum, nec per consequens est aliquid eorum. Consequentia patet, quia idem est esse hominis, essentia hominis et homo.<sup>6</sup>

<2> Item. Tam mobile quam locus est naturae permanentis; et motus non, sed naturae successivae.

<3> Item. Cum tempus sit motus, prout debet videri in quarto libro,<sup>7</sup> si tempus non est mobile nec locus, sequitur etiam quod neque motus. Sed ego probo<sup>8</sup> quod tempus non est mobile nec locus, quia dicit Aristoteles quarto huius<sup>9</sup> quod nullae partes diversae temporis simul sunt, nisi una includit aliam; sed mobilis et loci omnes partes simul sunt; igitur etc.

<4> Item. In quolibet instanti temporis<sup>10</sup> sempiternum est sphaera lunae et locus eius,<sup>11</sup> cum numquam desinant; et in nullo instanti est motus, prout<sup>12</sup> habetur in<sup>13</sup> sexto<sup>14</sup> huius;<sup>15</sup> igitur etc.

<5> Item. Arguitur quod motus non sit locus, quia motus est subiective in eo quod movetur, ut dicitur tertio huius;<sup>16</sup> et non est locus in eo quod movetur, sed in locante forte quiescente. Etiam ultimae sphaerae est per se motus, immo primo, et eius non est per se locus. Immo vel ultimae sphaerae non est locus, vel ille secundum Commentatorem<sup>17</sup> est locus centri, et ille non est motus ultimae sphaerae.

<6> Item. Arguitur quod motus non sit ipsum mobile, scilicet quod movetur. Motus enim<sup>18</sup> est actus ipsius mobilis, ut dicitur tertio huius;<sup>19</sup> et idem non est actus sui ipsius; igitur etc.<sup>20</sup>

<7> Item. Motus est in mobili subiective, ut dicitur tertio huius,<sup>21</sup> et idem non est subiective in se.

<8> Item. Cum locus qui acquiritur sit terminus ad quem et locatum sit mobile, manifestum est quod mobile non est de essen-

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6 homo *add.* prout manifestari debet quarto *Metaphysicae* G. 7 Aristoteles, *Physica*, IV, 10, 218a33-218b1. 8 probo] dico G. 9 Aristoteles, *Physica*, IV, 10, 218a11-13. 10 temporis] tempus C. 11 eius] est G. 12 prout] ut G. 13 in *om.* G. 14 sexto] quarto C. 15 Aristoteles, *Physica*, VI, 3, 234a31. 16 Aristoteles, *Physica*, III, 2, 202a13-14. 17 Averroes, *In Physicam*, IV, comm. 43, fol. 142v G-H; IV, comm. 45, fol. 144r B; and VIII, comm. 84, fol. 432r E-F. 18 enim *om.* G. 19 Aristoteles, *Physica*, III, 2, 202a7-8. 20 igitur etc. *om.* G. 21 Aristoteles, *Physica*, III, 2, 202a13-14.

tia termini ad quem; et tamen motus est de essentia termini ad quem<sup>22</sup> secundum Commentatorem.<sup>23-24</sup>

<9> Item. Si terra moveretur sursum, non est verum quod ille motus sit illa terra, quia ille motus est innaturalis et violentus ipsi terrae; terra autem non est sibi ipsi<sup>25</sup> innaturalis et violenta.

<10> Item. Sequeretur quod materia esset motus, si Deus eam solitarie moveret; et sic ipsa esset actus, quod est inconveniens.

### <Quid nominis motus>

Antiquiores non dubitaverunt de ista quaestione, sed concorditer concesserunt motum localem esse aliam rem a mobili et loco, sed iam posteriores moderni propter rationes praedictas posuerunt quod motus non sit alia res a mobili. Sed<sup>26</sup> ad videndum<sup>27</sup> oportet supponere quid nominis, quia sine hoc non potest esse disputatio, ut patet<sup>28</sup> quarto *Metaphysicae*, et in libro *Posteriorum*, et etiam in libro *De sensu*, ubi dicitur quod quid nominis est principium doctrinae.<sup>29</sup> Omnes ergo concedunt quod motus est mutatio quaedam, et moveri mutari. Et in quinto huius<sup>30</sup> dicit Aristoteles: “et est per se notum quod mutari est aliter et aliter se habere prius et posterius, vel saltem est prius aliquid se habere, et posterius taliter non se habere, aut e converso.” Unde Aristoteles dicit sic: “quoniam autem omnis mutatio est a quodam in # quoddam (manifestat utique nomen. Post aliud enim aliquid et aliud<sup>31</sup> quidem prius aliud autem monstrat posterius).”<sup>32</sup> Et Commentator dicit sic: “hoc est per se manifestum, quoniam dum res fuerit in eadem dispositione, tunc<sup>33</sup> illic non erit transmutatio.”<sup>34</sup>

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22 et...quem om. (hom.) G. 23 Commentatorem add. ergo etc. G. 24 Averroes, *In Physicam*, VI, comm. 48, F. 25 ipsi om. G. 26 sed] etiam G. 27 videndum add. de hoc G. 28 patet] apparet G. 29 non inveni. 30 non inveni. # 73ra. 31 et aliud om. CG. 32 Aristoteles, *Physica*, V, 1, 224b35. 33 Averroes, *In Physicam*, V comm. 7, f. 211ra. 34 tunc] termini C.

## &lt;Conclusiones&gt;

Tunc ergo ego pono conclusiones.

<1> Prima<sup>35</sup> est quod possibile est<sup>36</sup> ultimam sphaeram moveri motu quo movetur sine loco. Probatum sic: quia, si ultima sphaera et alia fierent unum continuum per potentiam divinam, ita quod<sup>37</sup> totus mundus esset unum corpus continuum, tunc nullus esset locus secundum Aristotelem,<sup>38</sup> quia nulla esset superficies corporis continentis divisi et tangentis. Unde Aristoteles ponit totum mundum non habere locum, nisi ratione partium, quarum una locat aliam, quia continet eam et est divisa ab ea et tangens ipsam;<sup>39</sup> hoc enim requiritur ad hoc quod sit locus. Unde, si Deus omnia corpora annihilaret praeter istum lapidem, ipse<sup>40</sup> lapis non amplius esset in loco. Et tamen illo casu posito adhuc esset possibile quod Deus moveret simul circulariter totum mundum. Hoc probo per quendam articulum Parisius condemnatum,<sup>41</sup> in quo dicitur quod Deus non potest<sup>42</sup> movere simul totum mundum motu recto (error). Et non est ratio quare magis posset movere ipsum motu recto, quam motu circulari.

Item. Sicut motu divino movet omnes sphaeras caelestes simul cum ultima sphaera, ita potest<sup>43</sup> omnia alia, scilicet inferiora, volvere simul. Et si ipse possit<sup>44</sup> omnia volvere simul, cum modo<sup>45</sup> sint ad invicem discontinuata, non minus hoc potest,<sup>46</sup> si essent facta unum continuum. Ergo potest<sup>47</sup> totum mundum movere, licet non esset locus.

Item. Oporteret<sup>48</sup> concedere, si totus mundus esset unum continuum, quod Deus extra posset formare unum granum milii tangens illum mundum, et quod illo grano milii formato quiescente Deus potest<sup>49</sup> sic volvere illum mundum quod continue alia et alia pars eius tangeret illud granum milii;<sup>50</sup> et tamen illo posito ille

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35 prima *add.* conclusio G. 36 est] esset G. 37 quod] ut G. 38 secundum Aristotelem *om.* G. 39 Aristoteles, *Physica*, IV, 5, 212b8-11. 40 ipse] iste G. 41 See Roland Hissette, *Enquête sur les 219 articles condamnés à Paris le 7 mars 1277* (Louvain, 1977), 118. 42 potest] posset G. 43 potest] posset G. 44 possit] potest G. 45 modo] non G. 46 potest] posset G. 47 potest] posset G. 48 oporteret] oportet G. 49 potest] posset G. 50 milii *om.* G.

mundus non haberet aliquem locum. Et etiam, si Deus illo grano formato posset sic volvere illum totum mundum,<sup>51</sup> ita posset sine illo.<sup>52</sup>

<2> Secunda conclusio est<sup>53</sup> quod ultima sphaera non solum ex eo movetur quod se habet continue aliter et aliter ad ipsam terram,<sup>54</sup> vel ad aliquod aliud corpus. Probatio: quia non minus moveretur, si omnia alia volverentur cum illa<sup>55</sup> sine alio motu eorum;<sup>56</sup> et tamen tunc non se haberet per talem motum aliter et aliter |# ad<sup>57</sup> aliquod aliud corpus.

Item. Non minus oportet se habere aliter et aliter quod movetur motu recto, quam quod movetur circulariter. Et tamen ad moveri recte non oportet se habere aliter et aliter ad aliud corpus, quia si a Deo totus mundus moveretur simul motu recto, non propter hoc se haberet aliter et aliter ad terram, licet quiesceret sicut nunc habet, scilicet<sup>58</sup> si terra volveretur. Ergo ex aliter se habere ad terram non sequitur quod moveatur. Ideo non solum ex eo movetur quod aliter se habet ad terram vel ad aliud corpus, quoniam ita diceremus de alio corpore, sicut diximus de terra.

Item. Sequeretur quod ex motu deformi terrae vel partium eius ultima sphaera deformiter et irregulariter moveretur, quod est falsum. Consequentia patet, quia ex tali motu irregulari terrae vel partium eius ultima sphaera deformiter et irregulariter se haberet ad terram aliter et aliter.

<3> Tertia conclusio est<sup>59</sup> quod ultimam sphaeram moveri est eam intrinsece aliter et aliter se habere prius et posterius. Probo, quia per quid nominis 'moveri' est aliter et aliter se habere prius et posterius;<sup>60</sup> et tamen moveretur, licet non se haberet aliter et aliter prius et posterius ad aliquod extrinsecum, ut apparuit per conclusiones praecedentes;<sup>61</sup> ergo etc.

Sed aliqui respondent quod moveri est aliter et aliter se habere ad aliquod quiescens, aut simpliciter, si aliquid quiescit, aut sub

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51 illum totum mundum] totum mundum istum G. 52 illo *add.* grano G. 53 est *om.* G. 54 terram *om.* C. 55 illa] ea G. 56 eorum] earum C. # 73rb. 57 ad] et G. 58 scilicet] sicut C. 59 est *om.* G. 60 proba...posterius] probatur ipsam moveri est eam se aliter et aliter habere ut patet ex quid nominis *in marg.* G. 61 Johannes Buridanus, *Quaestiones super libros Physicorum*, III, q.7, concl. 1-2.

condicione quia, si aliquid quiesceret, se haberet ad illud aliter et aliter. Sed ista evasio nihil valet, quia possibile est quod ultima sphaera moveretur de facto, licet nihil de facto quiesceret; ergo ipsa nullo modo se haberet de facto aliter et aliter ad aliquod quiescens nec ad aliquod extrinsecum. Ergo si non se haberet aliter et aliter intrinsece, ipsa nullo modo se haberet aliter et aliter de facto, ideo nullo modo mutaretur de facto. Nam ad mutari requiritur aliter et aliter se habere simpliciter de facto, et non solum sub condicione.

Item. Numquam habitus debet describi per privationem sibi oppositam, immo oportet quod fiat e converso. Sed iste terminus 'quiescere' est privatio opposita huic termino 'moveri'; ergo mala est descriptio dicens et declarans quid nominis 'moveri' quod moveri sit aliter et aliter<sup>62</sup> se habere ad aliquod<sup>63</sup> quiescens. Nam loco huius termini 'quiescens' pono eius descriptionem, tunc idem omnino describeretur per se ipsum, scilicet sic: "moveri est aliter et aliter se habere ad illud quod est aptum natum moveri et<sup>64</sup> |# non movetur," et hoc est manifeste<sup>65</sup> inconveniens.

<4> Quarta conclusio est<sup>66</sup> quod motus ultimae sphaerae non est sphaera illa, nec locus eius. Primo manifestum est quod non est locus eius, quia possibile est quod moveretur, licet non haberet locum, ut dictum est;<sup>67</sup> et quia, si habet locum, tamen ille est divisus ab ea, motus autem eius non est divisus ab ea, cum dictum sit quod ipsa intrinsece aliter et aliter se habet.<sup>68</sup> Etiam<sup>69</sup> nec ille motus est illa sphaera, quia ut<sup>70</sup> dictum fuit in quaestione de distinctione figurae a figurato,<sup>71-72</sup> non est imaginabile vel possibile quod aliquid se habeat aliter quam se habebat ante, nisi hoc sit ad<sup>73</sup> aliquod extrinsecum, vel nisi hoc sit propter aliquod<sup>74</sup> esse quod ante non erat, aut non esse quod ante erat; sed duo primi modi non habent<sup>75</sup> locum in motu ultimae sphaerae, ut patet ex dictis; ergo oportet concedere tertium modum, et tamen quantum ad substantiam

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62 et aliter om. (hom.) G. 63 aliquod om. G. 64 et rep. C. #73va. 65 manifeste] manifestum C. 66 est om. G. 67 Johannes Buridanus, *Quaestiones super libros Physicorum*, III, q. 7, concl. 1. 68 Johannes Buridanus, *Quaestiones super libros Physicorum*, III, q. 7, concl. 3. 69 etiam] sed etiam G. 70 ut] sicut G. 71 a figurato] ad figuratum G. 72 Johannes Buridanus, *Quaestiones super libros Physicorum*, II, q. 3. 73 ad om. G. 74 aliquod] aliquid G. 75 habent] habet G.

ultima<sup>76</sup> sphaerae nihil est quod non esset ante, et nihil erat ante quod non sit modo; ergo aliud a sphaera est quod ante non<sup>76</sup> erat, vel e converso, et hoc non est nisi motus vel partes eius, igitur etc.

Item. Motus ultima<sup>77</sup> sphaerae non est mutatio eius substantialis, nec in ordine ad aliquod extrinsecum, nisi hoc acciderit<sup>77</sup> ad aliud aliter se habere intrinsece, ut praedictum est. Ergo est mutatio secundum dispositionem aliam a substantia sphaerae et sibi inhaerentem.

Item. Aliter et aliter se habet intrinsece. Ergo est alteritas alicuius ab aliquo intrinsece; et non substantiae sphaerae ad se ipsam circumscripto omni alio; ergo est alia dispositio, et illa est motus eius.

<5> Quinta conclusio est quod motus ultima<sup>78</sup> sphaerae est distinctus ab ultima sphaera et a loco eius, si habeat locus: quia est, et non est hoc nec illud; ergo etc.

<6> Sexta conclusio est quod motus ultima<sup>79</sup> sphaerae est res pure successiva, cuius scilicet est pars prior et pars posterior non manentes simul, quia si esset res permanentis naturae, tunc secundum illam ultima sphaera non se haberet aliter et aliter prius et posterius plus, quam secundum eius magnitudinem, vel figuram, vel alia eius accidentia permanentia, quod est falsum.

#### <Ad rationes >

Tunc igitur respondendum est ad rationes.

<1> Ad primam manifestum est quod sine dispositione superaddita<sup>78</sup> non potest<sup>79</sup> salvari quod ultima sphaera se habeat aliter et aliter intrinsece, sicut se habet.

<2> Ad aliam<sup>80</sup> dico quod non plus reputarem impossibile<sup>81</sup> quod esset motus et nihil moveretur vel mutaretur, quam quod esset albedo et nihil esset album. Neutrum est possibile naturaliter, et utrumque est possibile supernaturaliter. Sed de hoc quod dicitur, quod impli-

76 non] nec G. 77 acciderit] exciderit G. 78 superaddita] habita G. 79 potest] possit G. 80 aliam] secundam G. 81 impossibile *om.* G. # 73vb.

cat contradictionem esse motum localem et non esse |# locum, ego dico quod motus<sup>82</sup> ultimae sphaerae vel navis in fluvio non dicitur localis quia necesse sit quod secundum illum mutetur locus, sed quia secundum communem cursum naturae omne quod movetur illo loco variat de facto habitudinem localem vel situalem ad aliquod<sup>83</sup> aliud. Et omnino ille motus quem vocamus 'localem' potest<sup>84</sup> non esse localis, quia nullus mutaretur locus nec situs ad aliquam aliam rem; sed tunc non possem illum percipere. Non ergo vocatur motus 'localis' quia ad ipsum sit locus necessarius, sed quia percipi non potest<sup>85</sup> nisi appareret mutatio loci vel situs rei ad aliam rem; unde existentes in navibus in mari velociter et simul motis non percipiunt quod illae moveantur.

<3> Ad aliam dictum fuit prius quod forma ita bene<sup>86</sup> redderetur intensa, si plures gradus vel maiores gradus generarentur simul, sicut si generarentur unus prius et alter posterius cum permanentia eorum. Modo a fortiori lucido et<sup>87</sup> fortiore motore ceteris paribus generarentur plures gradus simul luminis vel velocitatis et maiores, quam a debilibus; ideo esset intensius lumen et intensior velocitas.

<4> Ad aliam dicitur quod termini intrinseci, qui sunt de necessitate motuum quos vocamus 'locales', non sunt loca, sed sunt partes extremae illorum motuum, sicut partes extremae lineae sunt termini lineae.

<5> Ad aliam<sup>88</sup> rationem responsum fuit in alia quaestione.<sup>89</sup> Haec de quaestione.

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82 motus *add.* alias locus *sup. lin. (a.l.)* C. 83 aliquod] aliquid G. 84 potest] posset G. 85 potest] posset G. 86 forma ita bene] ita bene forma G. 87 et *add.* a G. 88 aliam] ultimam G. 89 Johannes Buridanus, *Quaestiones super libros Physicorum*, III, q. 6.