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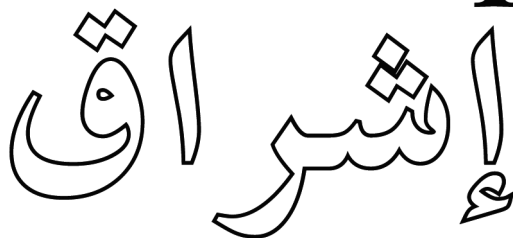


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**Ишрак • إشراق • Озарение • Illumination**

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# Ishraq



Islamic philosophy  
yearbook

№ 10

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2022



Moscow  
2022

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ФОНД ИБН СИНЫ

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## СОДЕРЖАНИЕ \* CONTENTS

От главного редактора . . . . .	11
From the Editor . . . . .	12

### I

#### АСПЕКТЫ ФИЛОСОФСКОЙ МЫСЛИ АЛ-ФАРАБИ

\*

##### Aspects of the Philosophical Thought of al-Farabi

<i>Cecilia Martini Bonadeo</i> . Ancient Philosophical Visual Theories and their Use by al-Fārābī . . . . .	13
<i>Charles E. Butterworth</i> . A Tale of Two Cities . . . . .	39
<i>Реза Давари Ардакани</i> . Новые политические принципы и «совершенный город» Фараби . . . . .	62
<i>Thérèse-Anne Druart</i> . Al-Fārābī: The Happy Marriage between Logic and Music . . . . .	72
<i>Janis Esots</i> . The Key Paradigms of al-Fārābī's Political Philosophy: Revisiting the Issue . . . . .	89
<i>Alexander Fidora, Nicola Polloni</i> . Ordering the Sciences: al-Fārābī and the Latinate Tradition . . . . .	110
<i>Yosra Garmi</i> . Médecine et musique dans la philosophie d'Abū Naṣr al-Fārābī (m. 950) . . . . .	131
<i>Nadja Germann</i> . The Power of Words: al-Fārābī's Philosophy of Language . . . . .	193
<i>Rafael Ramón Guerrero</i> . L'Aristote d'al-Farabi et son incidence sur la renaissance européenne . . . . .	212
<i>Хасан Йусуфийан, Мухаммад Садик Алипур</i> . Философия имамата в мысли Фараби . . . . .	229
<i>Галия Курмангалиева</i> . Единство философии и науки в наследии ал-Фараби . . . . .	239
<i>Аббас Али Мансури, Захра Кахризи</i> . Посмертная судьба несовершенных душ, согласно Фараби . . . . .	263
<i>Sayyid Reza Moazzen</i> . Conceptual, Propositional and Systematical Analysis of Fārābī's Views on Individuation . . . . .	274

<i>Абдумалик Нысанбаев. Философия взаимопонимания: ал-Фараби и перспективы казахстанской философии . . . . .</i>	284
<i>Joshua Parens. Alfarabi's Harmonization: Authentic and Exoteric. . . . .</i>	301
<i>Фатима Шахиди, Сеййид Хусейн Мусавийан, Сеййид Махмуд Йусуф Сани. Понятие категории в Кутаб ал-хуруф Фараби . . . . .</i>	321
<i>Frédérique Woerther. Définitions et usages de la rhétorique d'après les Didascalía in Rethoricam Aristotilis ex glosa Alfarabii . . . . .</i>	327

## II ЛОГИКА

\*

### Logic

<i>Andrey Smirnov. Being and Process: How to 'Edify' the 'Arab Reason' (and Any Reason at all) . . . . .</i>	347
--	-----

## III К ИСТОРИИ «ИСФАХАНСКОЙ ФИЛОСОФСКОЙ ШКОЛЫ»

\*

### Towards the History of Isfahan Philosophical School

<i>Reza Hisari, Hamed Naji. Recently Discovered Document Regarding the Influence of Abū al-Ḥasan Kāshānī on Mullā Ṣadrā's Views on Mental Existence . . . . .</i>	358
<i>Matthew Melvin-Koushki. Safavid Twelver Lettrism between Sunnism and Shi'ism, Mysticism and Science: Rajab al-Bursī vs. Maḥmūd Dihdār . . . . .</i>	379

## IV ФЕНОМЕНОЛОГИЯ И СРАВНИТЕЛЬНАЯ ФИЛОСОФИЯ

\*

### Phenomenology and Comparative Philosophy

<i>Е.А. Фролова. Место природы в арабо-исламской культуре. . . . .</i>	431
<i>Ф.О. Нофал. На пути к феноменологическому исламоведению . . . . .</i>	446



V  
ПАМЯТИ ГЛАВНОГО РЕДАКТОРА

\*

**In Memory of Chief Editor**

<i>Т.Г. Корнеева, А.А. Лукашев, Ф.О. Нофал, Р.В. Псху, Ю.Е. Федорова.</i>	
Янис Эшотс: исследователь, переводчик, редактор . . . . .	463
<i>R. Vilozny, Н.И. Пригарина, А.В. Смирнов.</i> «Это расставание между тобой и Мной». Памяти Яниса Эшотса . . . . .	475

**In memoriam**

Мисбах Йазди * Misbah Yazdi . . . . .	488
Мусо Диноршоев * Muso Dinorshoev . . . . .	490
Хасан Ханафи * Hassan Hanafi . . . . .	492
Йозеф ван Эсс * Josef van Ess . . . . .	495
Резюме статей, написанных на английском и французском языках . . . .	497
Summaries of the Russian Articles . . . . .	505
Список авторов статей десятого выпуска . . . . .	510
List of the Contributors of the 10 <sup>th</sup> Issue. . . . .	511

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## **ORDERING THE SCIENCES: AL-FĀRĀBĪ AND THE LATINATE TRADITION**

### **1. Introduction**

The role played by al-Fārābī's theories in the Latin Middle Ages has been often neglected and diminished<sup>1</sup>. Typical of 20<sup>th</sup>-century scholarship, such disregard has often been an outcome of ungrounded assumptions (e.g., that only explicit sources were influential and only 'extended' works have 'extended' influence on the tradition) and an out-dated approach to Latin medieval philosophy. In the past few decades, a mature post-Eurocentric approach to the history of both philosophy and science gave ground to a rediscovery of the central importance of Islamicate philosophy for the development of Scholasticism and the relevance of 'minor' authors regarding its establishment.

Considering al-Fārābī a minor author would certainly be a mistake. His thought marks a turning point for the *falsafa*, and his influence lasted for centuries, both directly and indirectly. Yet, if we look at the Latinate world, when considering the works written by medieval philosophers and the translations made of al-Fārābī's works, his role pales in comparison to Avicenna's or Averroes's. Only a few of his works were available in Latin, and few authors explicitly refer to his name. However, it is not the quantity of available works that makes a thinker more or less influential. Additionally, explicit references

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<sup>1</sup> This article is the unitary and organic result of a long-lasting and productive collaboration between its authors. Nonetheless, Nicola Polloni is responsible for sections 1-3, and Alexander Fidora for sections 4-5.

to an author do not plainly manifest the universe of texts, ideas, and problems that practitioners consulted in order to ground their speculations.

In this article, we discuss a number of cases in which al-Fārābī's influence is remarkable. We focus on the treatment of two main contexts in which one text in particular, the *Kitāb iḥṣā' al-'ulūm*, played a crucial role: that of the 12<sup>th</sup>-century Toledan translators and that of the early-Scholastic Parisian masters. These case studies shall be considered to be a contribution to a wider dossier on the influence of al-Fārābī on the Latinate medieval tradition, a work which is still to be written.

## 2. Translating al-Fārābī into Latin in Toledo

At least two teams of translators were working in Toledo in the second half of the 12<sup>th</sup> century. A first group was probably led by Gerard of Cremona and included at least one Mozarabic collaborator, Galippus. A second group was likely led by the Jewish philosopher Abraham ibn Daud (Lat. Avendauth) and included an Iberian collaborator, Dominicus Gundissalinus, who in turn would also collaborate with another translator, John of Spain. And if one trusts the manuscript tradition of some of the Toledan translations, Gundissalinus appears to have made solo translations later in his career<sup>2</sup>.

Both Gerard of Cremona and Dominicus Gundissalinus were members of the chapter of Toledo's archbishopric and its institutional organisation, and the overall management of Toledan translations was probably led from there. Some sort of central organisation of the two teams ensured the correct implementation of the programme of translations, avoiding overlaps and prioritising authors and works to be rendered into Latin<sup>3</sup>. As a consequence, the two teams tended to focus on two different sets of authors, Gerard of Cremona translating *mostly* scientific works and Aristotle's books while Gundissalinus worked *mostly* on Islamicate philosophers. Although there are cases in which the manuscript tradition preserves a duality of partial versions of these translations — probably the incidental outcome of the biphasic translating process —

<sup>2</sup> For a reconstruction of Gundissalinus's biography and Toledan activities, see Nicola Polloni, *The Twelfth-Century Renewal of Latin Metaphysics: Gundissalinus's Ontology of Matter and Form* (Toronto: PIMS, 2020), pp. 1–19.

<sup>3</sup> See C. Burnett, 'The Coherence of the Arabic-Latin Translation Program in Toledo in the Twelfth Century', *Science in Context* 14 (2001), pp. 249–288, and C. Burnett, 'Literal Translation and Intelligent Adaptation amongst the Arabic-Latin Translators of the First Half of the Twelfth Century', in B.M. Scarcia Amoretti, ed., *La diffusione delle scienze islamiche nel Medioevo europeo* (Roma: Accademia dei Lincei, 1987), pp. 9–28.

the two teams did not translate the same work twice<sup>4</sup>. There are only very few exceptions to this otherwise reliable process of avoiding redundancy, among which al-Fārābī's *Kitāb iḥṣā' al-'ulūm* stands out.

Before passing on to examine the odd case of the Latin translations of this work, a short assessment of the other translations of al-Fārābī's texts is necessary. The chart below summarises both Latin translations and translators of al-Fārābī's works in the Middle Ages according to the summary made by Mauro Zonta and a recent study by Dag N. Hasse and Andreas Büttner<sup>5</sup>.

Work	Team	Period
al-Fārābī, <i>Distinctio super librum Aristotelis de naturali auditu</i>	Gerard of Cremona	12 <sup>th</sup> c.
al-Fārābī, <i>De syllogismo</i>	Gerard of Cremona	12 <sup>th</sup> c.
al-Fārābī, <i>De scientiis</i>	Gerard of Cremona	12 <sup>th</sup> c.
al-Fārābī, <i>De intellectu et intellecto</i>	Gundissalinus	12 <sup>th</sup> c.
al-Fārābī, <i>De scientiis</i>	Gundissalinus	12 <sup>th</sup> c.
al-Fārābī, <i>Expositio libri quinti Elementorum Euclidis</i>	Gundissalinus	12 <sup>th</sup> c.
al-Fārābī, <i>Fontes quaestionum</i>	Gundissalinus	12 <sup>th</sup> c.
al-Fārābī, <i>Liber exercitationis ad viam felicitatis</i>	Gundissalinus	12 <sup>th</sup> c.
al-Fārābī (ps.), <i>De ortu scientiarum</i>	Gundissalinus	12 <sup>th</sup> c.
al-Fārābī, <i>Didascalica in Rhetoricam Aristotelis ex Glossa Alfarabii</i>	Hermann the German	13 <sup>th</sup> c.
al-Fārābī, <i>Commentarius in libros Physicorum Aristotelis</i>	unknown	unkn.

<sup>4</sup> See C. Burnett, 'Scientific Translations from Arabic: The Question of Revision', in M. Goyens, P. De Leemans, and A. Smets, eds., *Science Translated: Latin and Vernacular Translations of Scientific Treatises in Medieval Europe* (Leuven: Leuven University Press, 2008), pp. 11–34.

<sup>5</sup> See M. Zonta, 'al-Fārābī, Latin Translations of', in H. Lagerlund, ed., *Encyclopaedia of Medieval Philosophy* (Dordrecht: Springer, 2011), pp. 352–353, and D.N. Hasse and A. Büttner, 'Notes on Anonymous Twelfth-Century Translations of Philosophical Texts from Arabic into Latin on the Iberian Peninsula', in D.N. Hasse and A. Bertolacci, eds., *The Arabic, Hebrew, and Latin Reception of Avicenna's Physics and Cosmology* (Berlin: De Gruyter, 2018), pp. 313–369. See also D. Salman, 'The Medieval Latin Translations of Alfarabi's Works', *New Scholasticism* 13 (1939), pp. 245–261; M. Alonso Alonso, 'Traducciones Del Arcediano Domingo Gundisalvo', *Al-Andalus* 12 (1947), pp. 295–338; and M. Grignaschi, 'Les traductions latines des ouvrages de la logique arabe et l'abrégé d'Alfarabi', *Archives d'Histoire Doctrinale et Littéraire du Moyen Âge* 47 (1972), pp. 41–107.

Gerard of Cremona appears to have translated three works authored by al-Fārābī. *Distinctio* is a partial summary of the final books of Aristotle's *Physics* which, one may speculate, was connected to Gerard's translation of this work by Aristotle, perhaps accompanying it in the Arabic manuscripts he used for his translation. This work is followed by al-Fārābī's *De syllogismo* and Gerard's translation of *Kitāb ihṣā' al-'ulūm (De scientiis)*. We will return to this translation later<sup>6</sup>.

Gundissalinus worked on a few more translations of al-Fārābī's works. Momentarily leaving aside his own version of *De scientiis*, Gundissalinus rendered into Latin the short psychological treatise *Fī al-'aql* (Lat. *De intellectu et intellecto*). In this case, too, one may wonder whether this text is related to the translation of Avicenna's *De anima* by Gundissalinus and Ibn Daud. In fact, al-Fārābī's *De intellectu et intellecto* is only one of a series of psychological treatises that this team had translated. Unfortunately, the lack of evidence does not allow for anything other than mere historical speculation. Gundissalinus also translated into Latin part of al-Fārābī's '*Uyūn al-masā'il*', rendered as *Fontes quaestionum* or *Flos Alfarabii secundum sententiam Aristotelis*<sup>7</sup>. Although constantly neglected by scholarship, this short metaphysical text provided medieval philosophers with intriguing insights into Islamicate metaphysics, in close proximity to Avicenna's *Liber de philosophia prima*. Gundissalinus and his team also translated the short *Liber exercitationis ad viam felicitatis*, discussing ethical issues and, possibly, the *Expositio libri quinti Elementorum Euclidis*, that is, the discussion of the fifth book of Euclid's *Elements*<sup>8</sup>. These works are either uncritically edited or almost completely neglected by recent scholarship. As a consequence, very little can be said about their Latin translation, influence on the medieval debate, and even their relation to al-Fārābī's original production.

The list of Gundissalinus's translations also includes another work not authored by al-Fārābī, but which circulated under his name during the Latin

<sup>6</sup> A list of translations made by Gerard of Cremona was famously compiled by his students and added to the eulogy of their master. See Burnett, 'The Coherence of the Arabic-Latin Translation Program'.

<sup>7</sup> See M. Cruz Hernández, 'El "Fontes quaestionum" ('*Uyūn al-Masā'il*) de Abū Naṣr al-Fārābī', *Archives d'Histoire Doctrinale et Littéraire du Moyen Âge* 18 (1950-1951), pp. 303-323.

<sup>8</sup> See C. Burnett, 'Euclid and al-Farabi in MS Vatican, Reg. Lat. 1268', in R. Arnzen and J. Thielmann, eds., *Words, Texts and Concepts Cruising the Mediterranean Sea* (Leuven, Paris, and Dudley: Peeters, 2004), pp. 411-436; and H. Salman, 'Le 'Liber exercitationis ad viam felicitatis' d'Alfarabi', *Recherches de Théologie Ancienne et Médiévale* 12 (1940), pp. 33-48.

Middle Ages: *De ortu scientiarum*. Albeit pseudo-epigraphical, this work is thematically close to the *Kitāb ihṣā' al-'ulūm*. Both works discuss the disciplinary structure and internal organisation of the “sciences”. The problem of how different disciplines are related and epistemically justified must have been quite pressing at the time. As we shall see, the issue was abundantly discussed in Paris in the 13<sup>th</sup> century and, focusing on its material origins, the twofold translation of *De scientiis* and that of *De ortu scientiarum* seem to express a shared concern about this epistemological aspect.

Later in the 13<sup>th</sup> century, in Toledo Hermann the German would translate the introductory pages of al-Fārābī's commentary on Aristotle's *Rhetoric*, which circulated as *Didascalica in Rhetoricam Aristotelis ex Glossa Alfarabii* (also known as *Declaratio compendiosa super Libris Rhetoricorum Aristotelis*)<sup>9</sup>. Finally, scholars have speculated about a possible translation of al-Fārābī's commentary on the *Physics*, in light of some references that medieval philosophers make to this work<sup>10</sup>. Since the text has not been identified (and may not be extant in the manuscript tradition), almost nothing can be said about it and its relation to the *Distinctio* translated by Gerard of Cremona<sup>11</sup>.

According to this short discussion, nine works authored by al-Fārābī were translated during the Middle Ages. It is not an impressive number of works. Moreover, in some cases these translations did not cover al-Fārābī's entire text, instead offering a partial translation of some central excerpts. In addition, the number of these translations is uncertain. Considering this seemingly meagre interest in al-Fārābī's works, one question arises: why should Gerard and Gundissalinus translate the *Kitāb ihṣā' al-'ulūm* twice?

Crucial relevance was bestowed by both translators on the *Kitāb*. As Charles Burnett has pointed out, the disciplinary organisation of the Toledan translators follows the same structure that al-Fārābī discusses there<sup>12</sup>. Scholars have argued about which translation precedes the other, trying to understand whether Gerard was using Gundissalinus's version or the other way around. Leaving aside these exquisitely philological aspects, a different set of problems arises, concerning the genre to which these two translations are related.

<sup>9</sup> See Zonta, ‘al-Fārābī, Latin Translations of’.

<sup>10</sup> See H. Kischlat, *Studien zur Verbreitung von Übersetzungen arabischer philosophischer Werke in Westeuropa 1150–1400: das Zeugnis der Bibliotheken* (Münster: Aschendorff, 2000), at p. 32.

<sup>11</sup> See Zonta, ‘al-Fārābī, Latin Translations of’.

<sup>12</sup> See Burnett, ‘The Coherence of the Arabic-Latin Translation Program’, and C. Burnett, ‘The Arabo-Latin Aristotle’, in A. van Oppenraay and R. Fontaine, eds., *The Letter Before the Spirit: The Importance of Text Editions for the Study of the Reception of Aristotle* (Leiden: Brill, 2012), pp. 95–107.

This may appear as an odd issue: after all, isn't a translation always and necessarily the rendering of another text? Being so, the genre of the translation should be assimilated to the genre of original text. This is usually true, yet not necessarily so. As for the two Latin versions of the *Kitāb*, the problem concerns the meta-genre of Gundissalinus's version: is it to be considered as a translation or not?

In fact, as Manuel Alonso Alonso has pointed out, Gundissalinus's rendering of the *Kitāb* is an abridged, amended, and corrected version of the original version by al-Fārābī which, in turn, is reliably and entirely rendered by Gerard of Cremona<sup>13</sup>. Hence, a problem arises: is it a translation or an original text by Gundissalinus? If the former, one might wonder why Gundissalinus decided to alter the text in his translation, despite usually being quite reliable at translating. If the latter, one may consider Gundissalinus's attitude as reprehensible, at the very least, and perhaps even bordering what we would call plagiarism. Other options are possible between these two extremes — for instance, the possibility that Gundissalinus's version was a working translation. This is not the right context to delve into this controversial issue and we shall consider here, tentatively, Gundissalinus's *De scientiis* as an abridged translation. In any case, the duality of translations of al-Fārābī's *Kitāb iḥṣā' al-'ulūm* is almost certainly connected to the fundamental relevance that his text was supposed to have for the Latinate audience. Such central importance probably required the production of a reliable (or improved) translation of the text for the Latinate readers.

### 3. Disciplinary structures and epistemic justifications

Gundissalinus refers explicitly to al-Fārābī only twice, both times in his *De divisione philosophiae*<sup>14</sup>. Scarceness of direct references to his name and works, however, should not be taken for a lack of interest in his theories. To the contrary, Gundissalinus was an eager reader of al-Fārābī's texts, at least those to whose Latin translations he contributed. These texts, in turn, shaped some fundamental tenets of Gundissalinus's philosophical stances. A sign of such indebtedness can be appreciated by the thematic progression into which Gundissalinus's *De processione mundi* is structured. As it has been recently pointed out, this work closely follows al-Fārābī's 'metaphysical procedure',

<sup>13</sup> See al-Fārābī, *De scientiis* (tr. Gundissalinus), ed. M. Alonso Alonso; Domingo Gundisalvo, *De scientiis* (Madrid and Granada: CSIC, 1954), pp. 6–32.

<sup>14</sup> See Gundissalinus, *De divisione philosophiae*, ed. A. Fidora and D. Werner (Freiburg im Breisgau: Herder, 2007), pp. 71 and 120.

discussing the points which *De scientiis* claims must be included in any metaphysical examination of reality<sup>15</sup>.

Albeit found in many of Gundissalinus's philosophical works, it is on *De divisione philosophiae* that al-Fārābī's influence is the strongest. This work answers a pivotal question of the medieval cultural debate: how are different disciplines relationally organised? This question never ceased to play a special role during the Latin Middle Ages, particularly in relation to how different methodologies should be related to different objects of study. However, the case of *De divisione philosophiae* appears to respond to some additional specificities characterising the cultural and historical context in which Gundissalinus was living. In fact, together with the gradual translation of more and more Arabic and Greek texts into Latin throughout the 12<sup>th</sup> century, new disciplines and sub-disciplines started to be hinted at, referred to, and criticised. Translations were also shedding new light on traditional disciplines, reshaping their grounds and functions. Finally, the translations of Aristotelian works — not necessarily by Aristotle himself, but closely related to his thought — offered a new framework in which philosophy could find a proper organisation, culminating with metaphysics<sup>16</sup>.

These three factors — new disciplines appropriated by the Latinate tradition, the reshaping of traditional disciplines, and the availability of Aristotelian works — are all closely related to the phenomenon of translations, in which Gundissalinus was a central actor. And it is probably because of these three factors that Gundissalinus, having first-hand knowledge of their potential, decided to elaborate a system in which new and old sciences (*scientiae*, with a wider meaning than contemporary science) could be ordered and related hierarchically to wisdom (*sapientia*). Accordingly, *De divisione philosophiae* has a primary philosophical aim: the epistemic justification of a wide set of speculative, practical, and mechanical sciences by establishing their structural interrelation with Aristotle's philosophical disciplines. Overturning two main tenets of the medieval structure of knowledge — namely, the distinction between *trivium* and *quadrivium* and that between *liberal* and *mechanical* arts — Gundissalinus grounds his epistemic justification on the hierarchy among the philosophical branches of knowledge that originated with Aristotle<sup>17</sup>.

<sup>15</sup> See N. Polloni, 'Gundissalinus's Application of al-Fārābī's Metaphysical Programme. A Case of Epistemological Transfer', *Mediterranea: International Journal on the Transfer of Knowledge* 1 (2016), pp. 69–106.

<sup>16</sup> See A. Fidora, 'Dominicus Gundissalinus and the Introduction of Metaphysics into the Latin West', *The Review of Metaphysics* 66 (2013), pp. 691–712.

<sup>17</sup> For a detailed analysis of Gundissalinus's epistemology and its indebtedness to Aristotle, see A. Fidora, *Die Wissenschaftstheorie des Dominicus Gundissalinus. Voraussetzungen*



Accordingly, human knowledge is primarily divided into theoretical and practical philosophy, the former being the highest branch and including physics, mathematics, and metaphysics.

However, how can philosophy be related to the mechanical sciences, like medicine or alchemy? This is the core of Gundissalinus's problem: the necessity to epistemically justify a varied set of non-philosophical disciplines by linking them to philosophy. And he found the solution to this *impasse* in Avicenna's *Kitāb al-burhān*, which he translated into Latin in order to quote its invaluable ideas in his *De divisione philosophiae*<sup>18</sup>. The kind of relation binding the special sciences to philosophical realms is a *subordinative relation*, like that which specifies the hierarchical order among the philosophical realms themselves. Therefore, the key to a new foundation of scientific knowledge is offered by Avicenna and mediated by Aristotle.

Although Avicenna's theory of subalternation is the most important novelty contained in *De divisione philosophiae*, Gundissalinus's discussion relies heavily on al-Fārābī. Not only the 'true' al-Fārābī of *De scientiis*, but also the pseudo-epigraphical al-Fārābī that Gundissalinus thought had written *De ortu scientiarum*. Gundissalinus's reliance on these texts should not come as a surprise. Central aspects of *De scientiis*'s discussion are remarkably close to the epistemological theory that Avicenna would later elaborate, which is echoed in a detailed treatment of disciplines and their inner structure. In turn, *De ortu scientiarum* includes a wider set of sciences that are examined in continuity with Gundissalinus's philosophical aims. These aims, however, implied reliance on something other than al-Fārābī and Avicenna. Willing to provide Latin knowledge with a new epistemological base, Gundissalinus included a wide scheme of references to Latinate and Islamicate works — a grand project able to certify the continuity between the two philosophical traditions that were ultimately grounded in the same roots.

Gundissalinus engaged with this project systematically. Each main discipline is 'epistemologically profiled'. By using the Neoplatonic method of *didaskalika*, Gundissalinus details the main tenets characterising each science

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*und Konsequenzen des zweiten Anfangs der aristotelischen Philosophie im 12. Jahrhundert* (Berlin: Akademie Verlag, 2003).

<sup>18</sup> See R. Strobino, 'Avicenna's *Kitāb al-burhān*, II.7 and its Latin Translation by Gundissalinus: Content and Text', *Documenti e Studi sulla Tradizione Filosofica Medievale* 28 (2017), pp. 105–147. See also J. Janssens, 'Le *De divisione philosophiae* de Gundissalinus: Quelques remarques préliminaires à une édition critique', in E. Coda and C. Martini Bonadeo, eds., *De l'antiquité tardive au Moyen Âge: Études de logique aristotélicienne et de philosophie grecque, syriaque, arabe et latine offertes à Henri Hugonnard-Roche* (Paris: Vrin, 2014), pp. 559–570.

he discusses: its definition, genus, object, parts, subordinate sciences, function, and aim, and so on<sup>19</sup>. Each of these traits offered Gundissalinus the opportunity to insert digressions and (usually blind) quotations of Latin and Islamic works. In order to appreciate the main function carried out by al-Fārābī's *De scientiis*, the text of *De divisione philosophiae* can be dissected and compared to its main sources. The following examination of the chapter dedicated to natural philosophy is a case study giving a foretaste of the general structure of *De divisione philosophiae* and its reliance on al-Fārābī<sup>20</sup>.

The first chart summarises Gundissalinus's discussion of natural philosophy (*scientia naturalis*) in consideration of the ten traits characterising its epistemological profile:

<b>Natural philosophy: epistemological profile</b>	
Definition	“Natural science is the science considering only things unabstracted and with motion” <sup>21</sup> .
Genus	“...it is the first part of philosophy, since indeed it is first with respect to us. For we apprehend matter simultaneously with form by the senses earlier than we apprehend form without matter by the intellect” <sup>22</sup> .
Object ( <i>materia</i> )	“In truth, the matter of natural science is the body, but not according to what is being, nor according to what is substance, nor what is composed out of the two principles which are matter and form, but rather according to what is subjected to motion and rest and change” <sup>23</sup> .

<sup>19</sup> A thorough examination of Gundissalinus's *didaskalika* is offered in Fidora, *Die Wissenschaftstheorie des Dominicus Gundissalinus*, pp. 70–76.

<sup>20</sup> A more detailed examination of Gundissalinus's treatment of natural philosophy is available in A. Fidora and N. Polloni, ‘Hugh of St Victor, Dominicus Gundissalinus and the Place of the Mechanical Arts in Premodern Architectures of Knowledge’, *Revue de Théologie et de Philosophie*, forthcoming.

<sup>21</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 74: “Scientia naturalis est scientia considerans sola inabstracta et cum motu”. English translation by M. Clagett and E. Grant in E. Grant, ed., *A Source Book in Medieval Science* (Cambridge, MA: Harvard University Press, 1974), p. 17.

<sup>22</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 76: “ipsa est prima pars theoricæ philosophiæ, prima siquidem quantum ad nos. Prius enim nobis est formam cum materia simul apprehendere sensu quam formam sine materia intellectu”. English translation by Clagett and Grant, p. 17.

<sup>23</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, 76: “Materia vero naturalis scientiæ est corpus, non secundum quod est ens, nec secundum quod est substantia, nec secundum quod est compositum ex duobus principiis, quæ sunt materia et forma, sed secundum quod subiectum est motui et quieti et permutationi”. English translation by Clagett and Grant, p. 17.

Subordinate sciences ( <i>species</i> )	“These are the science of medicine, the science of judgments, the science of nigromancy according to physics, the science of images, the science of agriculture, the science of navigation, the science of mirrors, the science of alchemy, which is the science of the conversion of things into other species; and these eight are the species of natural science” <sup>24</sup> .
Inner parts ( <i>partes</i> )	<ol style="list-style-type: none"> <li>1. study of the principles of nature (<i>Physics</i>)</li> <li>2. study of supra- and sublunary worlds (<i>On Heaven and Earth</i>)</li> <li>3. study of sublunary elements (<i>On Generation and Corruption</i>)</li> <li>4. study of the two exhalations in the sublunary world (<i>Meteorology I-III</i>)</li> <li>5. study of mixtures and continuous bodies (<i>Meteorology IV</i>)</li> <li>6. study of mineral bodies (<i>On Minerals</i>)</li> <li>7. study of vegetative bodies (<i>On Plants</i>)</li> <li>8. study of animate bodies (<i>On Animals, On the Soul, and On Natural Things</i>)<sup>25</sup>.</li> </ol>
Function ( <i>officium</i> )	“The function of this art is in the contemplation of natural bodies and accidents — for the latter do not have existence except through these bodies — and it teaches the things from which, through which, and for which these bodies exist” <sup>26</sup> .
Aim	“The end of natural science is the cognition of natural bodies” <sup>27</sup> .
Method ( <i>instrumentum</i> )	“The instrument of this science is the dialectical syllogism, which consists of truths and probables” <sup>28</sup> .

<sup>24</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, 76: “...scilicet scientia de medicina, scientia de iudiciis, scientia de nigromantia secundum physicam, scientia de imaginibus, scientia de agricultura, scientia de navigatione, scientia de speculis, scientia de alquimia, quae est scientia de conversione rerum in alias species”. English translation by Clagett and Grant, p. 17.

<sup>25</sup> See Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, pp. 76–80. Gundissalinus identifies the parts of natural philosophy with the natural books authored by Aristotle (and pseudo-Aristotle).

<sup>26</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 82: “Officium autem eius artis est contemplari corpora naturalia et accidentia, quae non habent esse nisi per ista corpora; et docet res, a quibus et per quas et ad quas existunt corpora haec”. English translation by Clagett and Grant, p. 18.

<sup>27</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 86: “Finis vero scientiae naturalis est cognitio corporum naturalium”. English translation by Clagett and Grant, p. 19.

<sup>28</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 86: “Instrumentum autem huius artis est syllogismus dialecticus, qui constat ex veris et probabilibus”. English translation by Clagett and Grant, p. 19.

Practitioner ( <i>artifex</i> )	“The artificer is the natural philosopher who, proceeding rationally from the causes to effect and from effect to causes, seeks out principles” <sup>29</sup> .
Position ( <i>ordo</i> )	“It is to be read and learned after logic...” <sup>30</sup>

According to Gundissalinus, these ten traits define the structure of natural philosophy. The length of their discussion, however, is different. More than 80% of Gundissalinus’s treatment of natural philosophy is covered by the examination of three features: the inner parts of the discipline, its function, and its aim<sup>31</sup>. These three sections, in turn, are a long, rearticulated quotation of the *entire* chapter dedicated to natural philosophy in al-Fārābī’s *De scientiis*. Remarkably, the crucial discussion of the sciences as subordinate to natural philosophy — a fundamental tenet of Gundissalinus’s reflection — is in turn a quotation from pseudo-al-Fārābī’s *De ortu scientiarum*. If we add this section to our count, almost 85% of the chapter relies textually on al-Fārābī.

Reliance on al-Fārābī’s works	
Subordinate sciences	ps.-al-Fārābī, <i>De ortu scientiarum</i> <sup>32</sup>
Inner parts	Al-Fārābī, <i>De scientiis</i> <sup>33</sup>
Function	Al-Fārābī, <i>De scientiis</i> <sup>34</sup>
Aim	Al-Fārābī, <i>De scientiis</i> <sup>35</sup>

The remaining 15% of the text is based on Avicenna, al-Ghazālī, Boethius, and, perhaps, Aristotle himself. Each chapter of *De divisione philosophiae*

<sup>29</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 86: “Artifex est naturalis philosophus, qui rationabiliter procedens ex causis rerum effectus et ex effectibus causas et principia inquirat”. English translation by Clagett and Grant, p. 19.

<sup>30</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 86: “Post logicam autem legenda et discenda est...”. English translation by Clagett and Grant, p. 19.

<sup>31</sup> Namely, these three sections extend for 1354 words over 1684.

<sup>32</sup> Compare Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 76 with ps.-al-Fārābī, *De ortu scientiarum*, ed. C. Baeumker (Münster: Aschendorff, 1916), p. 20.

<sup>33</sup> Compare Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 76–80 with al-Fārābī, *De scientiis* (tr. Gundissalinus), ed. Alonso Alonso, pp. 120–127.

<sup>34</sup> Compare Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, pp. 82–86 with al-Fārābī, *De scientiis*, ed. Alonso Alonso, pp. 113–119.

<sup>35</sup> Compare Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 86 with al-Fārābī, *De scientiis*, ed. Alonso Alonso, p. 119.

differs from the others in its specificities. Nonetheless, the scheme in place with Gundissalinus's treatment of natural philosophy is a meaningful example of his use of and reliance on al-Fārābī in epistemological matters. Yet only a comprehensive study of al-Fārābī's overall influence on Gundissalinus will allow scholars to appreciate the extent of that reliance beyond the domain considered here.

Gundissalinus's enthusiastic reading of and adherence to al-Fārābī's theories probably facilitated the spread of works like *De scientiis* in early Scholasticism. Although often neglected by scholars, the role that al-Fārābī has played in the Aristotelian turn of the 12<sup>th</sup> century is remarkable. From a historical perspective, his theories helped the Toledan translators navigate the ocean of possible works to be translated into Latin. From a more properly philosophical point of view, al-Fārābī's epistemology facilitated the process of scientific appropriation of these newly translated works and the ideas they contained. Few other philosophers have had such a transformative and consequential role in medieval Latin philosophical culture.

#### 4. Discussing al-Fārābī's epistemology in Paris

As a matter of fact, the influence of al-Fārābī's *Kitāb iḥṣā' al-'ulūm* extended much further than 12<sup>th</sup>-century Toledo. It reached the 13<sup>th</sup> century when the first European universities were founded, with their characteristic distinction between philosophical, medical, legal, and theological studies. Each of these areas, which formed the four faculties, had to define their object of study, their methods and, of course, their specific syllabus.

To this end, the arts masters, that is, the philosophers, at the University of Paris developed a specific literary genre which is known as the introductions to philosophy. These were concise treatises that offered definitions of philosophy, along with a more detailed division of its parts and their relationship to each other. While the introductions to philosophy were neglected by traditional scholarship, the pioneering editions of a series of such texts from the first half of the 13<sup>th</sup> century by Claude Lafleur and others have confirmed their significance<sup>36</sup>. Although these sketches of philosophy cannot be compared to the sophisticated philosophical discussions which one finds

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<sup>36</sup> See, above all, C. Lafleur, *Quatre Introductions à la philosophie au xiii<sup>e</sup> siècle. Textes critiques et étude historique* (Montréal and Paris: Institut d'Études Médiévales and Vrin, 1988), and C. Lafleur (in collaboration with J. Carrier), ed., *L'enseignement de la philosophie au xiii<sup>e</sup> siècle. Autour du 'Guide de l'étudiant' du ms. Ripoll 109* (Turnhout: Brepols, 1997).

in other genres, such as the commentaries, they yield important insights into the self-understanding of the philosophical masters and their teaching during a period when philosophy acquired its independence from other disciplines. These works can therefore be considered foundational texts of Scholastic philosophy.

The introductions to philosophy drew not only on Latin sources, such as Hugh of St Victor's *Didascalicon*<sup>37</sup>, but they also incorporated materials that were translated in 12<sup>th</sup>-century Toledo. Among these materials, al-Fārābī's *Kitāb iḥṣā' al-'ulūm* deserves a special place, as it had an enormous impact on the philosophical introduction literature, not only indirectly through Gundissalinus's *De divisione philosophiae*<sup>38</sup>, but also directly through its two Latin translations. Thus, one can find references to both Gerard's and Gundissalinus's *De scientiis* in a large number of introductions, which clearly shaped their epistemological reflections. In particular, the quotations from al-Fārābī's division of the sciences were used to frame the reading of the Aristotelian corpus, especially that of logic. In fact, *De scientiis* was referred to by some 13<sup>th</sup>-century authors as "Logica Alfarabii"<sup>39</sup>. In what follows, we shall highlight al-Fārābī's contribution to the treatment of logic in some 13<sup>th</sup>-century introductions.

One of the first philosophical introductions, and certainly the most famous one, is the so-called "Guide de l'étudiant" from 1230–1240, which was discovered in 1927 by Martin Grabmann<sup>40</sup>, though it was only edited some sixty years later by Claude Lafleur<sup>41</sup>. The *Guide* divides philosophy according to

<sup>37</sup> For instance, Robert Kilwardby's famous introduction *De ortu scientiarum*. See J. Filipe Silva, 'Hugh of St. Victor and Robert Kilwardby on Science', in M.J. Muñoz, P. Cañizares, and C. Martín, eds., *La compilación del saber en la Edad Media* (Porto: FIDEM, 2013), pp. 515–531.

<sup>38</sup> Gundissalinus's *De divisione philosophiae* quotes approximately 40% of al-Fārābī's *Kitāb iḥṣā' al-'ulūm*. Cf. M. Bouyges, 'Notes sur les philosophes arabes connus des latins au Moyen Âge: VII. Sur le *De scientiis* d'Alfarabi récemment édité en arabe à Saïda, et sur le *De divisione philosophiae* de Gundissalinus', *Mélanges de l'Université Saint Joseph de Beyrouth* 9 (1923–1924), pp. 49–70, at p. 64.

<sup>39</sup> See the examples quoted in Grignaschi, 'Les traductions latines des ouvrages de la logique arabe et l'abrégé d'Alfarabi', p. 44.

<sup>40</sup> A few years later, M. Grabmann published his seminal article 'Eine für Examinazwecke abgefasste Quaestionensammlung der Pariser Artistenfakultät aus der ersten Hälfte des 13. Jahrhunderts', *Revue néo-scholastique de philosophie* 36 (1934), pp. 211–229.

<sup>41</sup> See Lafleur (in collaboration with Carrier), *Le 'Guide de l'étudiant' d'un maître anonyme de la Faculté des Arts de Paris au xiii<sup>e</sup> siècle* (Québec: Faculté de Philosophie de l'Université Laval, 1992).

the common Platonic-Stoic schema<sup>42</sup> into natural philosophy, which comprises metaphysics, mathematics and physics; moral philosophy, that is, ethics, economics and politics; and rational philosophy, that is, rhetoric, grammar and logic. Each of these parts is subdivided into smaller units which usually reflect the books of the *Corpus aristotelicum*. Thus, in the case of logic, the books of the Organon are described as the elementary parts of logic, echoing al-Fārābī's division of logic in his *Kitāb iḥṣā' al-'ulūm*. In fact, the anonymous author of the *Guide* explicitly refers to al-Fārābī when accounting for the subdivision of logic. He says:

Since logic identifies and rejects errors in the understanding of speech, as al-Fārābī says, and since the intellect errs in three ways, namely with regard to ordering, composing and comparing, therefore there are mainly three books by means of which the soul attains certainty regarding its errors. Through the *Categories* it attains certainty in the act of ordering, because this book deals with the categories which are subject to order... Through *On Interpretation* the soul attains certainty in the act of composing, because it teaches how to join subject and predicate. With regard to comparison, which consists in comparing the cause and the effect... there are four books, as we have said before [that is the *Topics*, the *Prior* and *Posterior Analytics* and the *Sophistical Refutations*]<sup>43</sup>.

This fragment, which contains the *Guide*'s sole reference to an Arabic author — which is remarkable in itself — draws on a passage from the very beginning of al-Fārābī's *Kitāb iḥṣā' al-'ulūm*. In Latin, this passage is only transmitted in Gerard of Cremona's translation, which was recently edited by Alain Galonnier. Here we read the following:

The art of dialectics, in sum, provides the rules which have the quality to correct reason and to lead man to the path of correction and of truth wherever it is possible that an error occurs regarding the objects of reason, and it

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<sup>42</sup> For the Platonic-Stoic division of philosophy and its development, see the fundamental studies by P. Hadot, e.g., 'Les divisions des parties de la philosophie dans l'Antiquité', *Museum Helveticum* 36/4 (1979), pp. 201–223, at pp. 208–212.

<sup>43</sup> Lafleur, Le 'Guide de l'étudiant' d'un maître anonyme, pp. 141–142: "Cum enim logica sit distinctiva vel pulsiva errorum quae fieri solent in intellectu sermonis, sicut dicit Alpharabius; et contingit intellectum errare tripliciter, quia vel in ratione ordinandi, vel componendi vel conferendi; et ideo sunt in logica tres libri principales, per quos anima in suis erroribus certificatur. Per librum enim *Praedicamentorum* certificatur in actu ordinandi; ibi enim agitur de praedicamentis, quae ordinabilia sunt... Per librum enim *Peri hermeneias* certificatur anima in actu componendi; ibi enim docetur ratio componendi praedicatum cum subiecto. Quantum vero ad actum conferendi, quia collatio est causae ad effectum... libri sunt quattuor, ut praehabitu est".

provides rules which guard man against the error that occurs unconsciously as well as against the error which is committed intentionally regarding the objects of reason, and it provides rules which test those objects of reason regarding which it is not clear that someone has not yet fallen into error<sup>44</sup>.

The anonymous author of the *Guide* clearly takes the idea of logic as a remedy to the errors of reason from *De scientiis*. However, he expands al-Fārābī's text, for while the latter speaks in vague terms about the different contexts in which such errors may occur, the author of the *Guide* claims that they can be distinguished by their specific causes, since they can originate from the intellect's acts of ordering, composing, and comparing. Hence, logic explores these three acts in three different books (or groups of books), namely Aristotle's *Categories*, his *On Interpretation*, and the books of the so-called *logica nova*. From a purely philological perspective, one has to agree with Alain Galonnier that this quotation from al-Fārābī's *De scientiis* is rather limited<sup>45</sup>; yet, from a historical-systematic point of view, it is rather important, as it lays the foundation for the distinction between the logic of concepts, propositional logic, and syllogistic/demonstrative logic, as is confirmed by later texts.

One such text is an introduction to logic which was edited by Mario Grignaschi, who attributed the text to Peter of Saint-Amour<sup>46</sup>. The only evidence for this attribution is the fact that the manuscript which preserves the text contains some works by Peter of Saint-Amour, who was rector of the University of Paris in 1281. However, the beginning of the manuscript features a series of anonymous introductions to philosophy; hence, it would seem more cautious to consider the fragment on logic to be anonymous like the other materials<sup>47</sup>. What makes this text so interesting is that it builds the whole presentation of logic on the *Guide*'s distinction of three acts of the intellect, which

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<sup>44</sup> A. Galonnier, *Le 'De scientiis Alfarabii' de Gérard de Crémone. Contribution aux problèmes de l'acculturation au XII<sup>e</sup> siècle* (Turnhout: Brepols, 2016), pp. 178–179: “Ars igitur dialecticae in summa dat canones quorum est proprietates est rectificare rationem et dirigere hominem ad viam rectitudinis, et ad veritatem in omni in quo est possibile ut error cadat ex rationatis, et canones qui custodiant ipsum et defendant ab errore qui provenit ignoranter, et errore qui fit cum industria in rationatis, et canones quibus experitur in rationatis illud de quo non sit securitas quin iam aliquis in ipso erraverit”.

<sup>45</sup> See Galonnier, *Le 'De scientiis Alfarabii' de Gérard de Crémone*, p. 94.

<sup>46</sup> See Grignaschi, ‘Les traductions latines des ouvrages de la logique arabe et l’abrégé d’Alfarabi’, pp. 44 and 106.

<sup>47</sup> For a detailed description of the contents of ms. Paris, Bibliothèque nationale de France, lat. 1374, see G. Dahan, ‘Une introduction à l’étude de la philosophie: Ut ait Tullius’, in C. Lafleur (in collaboration with J. Carrier), ed., *L’enseignement de la philosophie au xiii<sup>e</sup> siècle. Autour du ‘Guide de l’étudiant’ du ms. Ripoll 109* (Turnhout: Brepols, 1997), pp. 3–58, at pp. 54–58.



are said to correspond to the six books of Aristotle's *Organon*. Yet, the text does not quote the *Guide* as its source, but explicitly attributes this doctrine to al-Fārābī's *Logic*, that is, the *Kitāb iḥṣā' al-'ulūm / De scientiis*. Thus, the text reads as follows:

As al-Fārābī says in his *Logic*, logic is a guide to reason with regard to the three operations of the intellect. The first of which is apprehension of what is simple, which the Arabs call information. And to this end, we have the book of the *Categories*, wherein ten terms are established by means of which we refer to the ten basic genera of all things and how they are ordered in speech... For the case in which reason is a guide for the second operation of the intellect, which is the composition of the simple apprehensions, we have the book *On Interpretation*... For the case in which reason is a guide for the third operation of the intellect, which consists in drawing the conclusions from the premises, or the effects from the causes, as Isaac says, we have the various books of the new logic [i.e., the *Topics*, the *Prior* and *Posterior Analytics* and the *Sophistical Refutations*]<sup>48</sup>.

While the anonymous author slightly changes the terminology, he clearly sticks to the *Guide*'s supposedly Farabian presentation of logic according to the three acts of the intellect. The first of these is now called apprehension<sup>49</sup>, and refers to what is simple; as in the *Guide*, it is described as a logic of concepts that provides a certain structural order, referring the reader to Aristotle's *Categories*. The second act or operation of the intellect consists in the composition of these simple apprehensions; like in the *Guide*, this propositional logic is related to Aristotle's book *On Interpretation*. As to the third operation of the intellect, both texts explain the process of drawing conclusions, that is,

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<sup>48</sup> Grignaschi, 'Les traductions latines des ouvrages de la logique arabe et l'abrégé d'Alfarabi', p. 106: "Sicut dicit Alpharabius in sua logia, logica est directiva ipsius rationis quantum ad triplicem operationem intellectus. Prima est simplicium apprehensio, quae vocatur apud Arabes quaedam informatio, et sic ex hoc accipitur *Liber praedicamentorum*, in quo determinatur de X vocibus X rerum prima genera significantibus et haec prout ordinantur in dicibili... Si autem inductiva [leg. directiva] rationis quantum ad secundam operationem intellectus, quae est simplicium apprehensorum compositio, et sic accipitur *Liber Peri hermeneias*... Si autem sit directiva rationis quantum ad tertiam operationem intellectus, quae est quidam discursus praemissarum ad conclusionem seu causae ad effectum, ut dicit Ysaac, sic accipitur numerus librorum novae logicae".

<sup>49</sup> The author's terminology resembles that of an anonymous prologue quoted by R.-A. Gauthier in his edition of Thomas Aquinas's commentary on Aristotle's *On Interpretation*, Editio Leonina I\*/1, 5. "Dividitur autem secundum actum rationis qui est triplex: Unus est apprehendere simplicia [...] Secundus est illa apprehensa componere... istos duos actus ponit Philosophus in III *De anima*... Tertius actus quem addit Commentator est composita ordinare, et hoc pertinet ad syllogismum, de quo est tota logica".

sylogistic and demonstrative logic, in terms of the relation cause-effect, and designate the *logica nova*, to wit, the *Topics*, the *Prior* and *Posterior Analytics* and the *Sophistical Refutations*, as the texts of reference. In sum, the anonymous author of the introduction to logic provides an outline of the discipline which closely follows the *Guide*'s peculiar interpretation of al-Fārābī, whose name is now used as the logical authority *par excellence*, even though his teachings were notably transformed.

However, not all references to al-Fārābī in the introductions to philosophy arose from the *Guide*. The influential *Divisio scientiarum*, for instance, which was composed by Arnulf of Provence in about 1250, counts five explicit references to al-Fārābī, as opposed to three to al-Ghazālī, and only one to Avicenna. These references betray both the strong influence of Dominicus Gundissalinus and his translation and use of al-Fārābī. This is also the case in Arnulf's chapter on logic, which starts as follows: "al-Fārābī defines logic as follows: logic is the science of arguing accurately, that is, by distinguishing what is true from what is false"<sup>50</sup>, which in fact goes back to Gundissalinus's *De divisione philosophiae*<sup>51</sup>. This is immediately followed by a remark on the division of logic which is likewise attributed to al-Fārābī, namely:

He [that is, al-Fārābī] divided it [i.e., logic] into eight parts, which are as follows: Aristotle's *Categories*, the book *On Interpretation*, that is, *Peri Hermeneias*, the book *Topics*, the book *Sophistical Syllogisms*, the book *Prior Analytics of Syllogisms*, the book *Posterior Analytics*, poetry and rhetoric; the latter two are not counted among logic according to Aristotle and the common opinion<sup>52</sup>.

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<sup>50</sup> Cf. Lafleur, *Quatre Introductions à la philosophie au XIII<sup>e</sup> siècle*, p. 342: "Definit autem Alfarabius eam sic: Logica est scientia disserendi diligens, id est discernendi verum a falso".

<sup>51</sup> Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 148: "Sic definitur: Logica est ratio disserendi diligens, id est scientia disputandi integra".

<sup>52</sup> Cf. Lafleur, *Quatre Introductions à la philosophie au XIII<sup>e</sup> siècle*, p. 342: "[Alfarabius] dividit autem eam in partes octo quae sunt haec: *Categoriae* Aristotelis, liber *Interpretationis*, id est *Peri hermeneias*, liber *Topicorum*, liber *Sophisticorum syllogismorum*, liber *Priorum analyticorum syllogismorum*, liber *Posteriorum analyticorum*, poetica et rhetorica". This list is taken either from Gundissalinus's *De scientiis* or from his *De divisione philosophiae*. See al-Fārābī, *De scientiis* (tr. Gundissalinus), ed. Alonso Alonso, p. 79: "Octo igitur sunt partes logicae: *Categoriae*, *Peri hermeneias*, *Analytica priora*, *Analytica posteriora*, *Topica*, *Sophistica*, *Rhetorica*, *Poetica*". And Gundissalinus, *De divisione philosophiae*, ed. Fidora and Werner, p. 152: "Secundum Alfarabium octo sunt partes logicae: *Categoriae*, *Peri hermeneias*, *Analytica priora*, *Analytica posteriora*, *Topica*, *Sophistica*, *Rhetorica*, *Poetica*".

As we have already seen with regard to the *Guide* and the anonymous introduction to logic, Scholastic philosophers were particularly interested in the organic relations between the various parts of logic, which they identified with Aristotle's *Organon*. Arnulf's development of the Farabian list confirms this impression. Thus, in the central paragraphs of his chapter on logic, Arnulf explores the systematic connections of the logical disciplines, eventually identifying Aristotle's *Categories* with logic of concepts, *On Interpretation* with propositional logic, and the *logica nova* with syllogistic and demonstrative logic<sup>53</sup>. As far as rhetoric and poetics are concerned, it is worth pointing out that Arnulf takes a critical stance vis-à-vis their inclusion, which, as he claims, is not Aristotelian<sup>54</sup>. Although Arnulf does not base himself on the *Guide*'s distinction of a threefold operation of the intellect, his reading of al-Fārābī's presentation of logic is very similar in its outcome<sup>55</sup>.

While Gundissalinus's adaptation of *Kitāb iḥṣā' al-'ulūm* was, in general terms, more influential than Gerard's translation<sup>56</sup>, the division of logic according to the three operations of the intellect would acquire great popularity with time. A prominent example is Thomas Aquinas's prologue to his commentary on *On Interpretation*<sup>57</sup>:

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<sup>53</sup> Cf. Lafleur, *Quatre Introductions à la philosophie au XIII<sup>e</sup> siècle*, pp. 343–344. Arnulf explains first of all that the subject-matter of logic is the syllogism. He then makes a distinction between the nearer and the more remote parts of syllogisms: “aut remotis, et sic est scientia libri *Praedicamentorum*; aut propinquis, et sic est scientia libri *Peri hermeneias*. Et dico ‘propinquis’ in respectu quia de parte propinqua simpliciter, quae est propositio, simul de eo tractatur...”. Finally, he adds the books of the *logica nova*, which deal with the “virtus inferendi”.

<sup>54</sup> On this point, see D.L. Black, ‘The Traditions and Transformations in the Medieval Approach to Rhetoric and Related Linguistic Arts’, in C. Lafleur, ed., *L’enseignement de la philosophie au xiii<sup>e</sup> siècle. Autour du ‘Guide de l’étudiant’ du ms. Ripoll 109* (Turnhout: Brepols, 1997), pp. 233–254, at p. 238.

<sup>55</sup> For a more detailed analysis of al-Fārābī's (and Gundissalinus's) influence on Arnulf's *Divisio scientiarum*, including the latter's outline of natural philosophy, see A. Fidora, ‘The Arabic Influence on the Classification of Philosophy in the Latin West: The Case of the Introductions to Philosophy’, *Micrologus. Nature, Sciences and Medieval Societies* 28 (2020) (= *The Diffusion of the Islamic Sciences in the Western World*), pp. 191–209.

<sup>56</sup> Vicent of Beauvais contributed greatly to the success of Gundissalinus's adaptive translation of al-Fārābī's *Kitāb iḥṣā' al-'ulūm*, as he reproduced large portions of the text in his *Speculum doctrinale*, including sections from the chapter on logic. See S. Lusignan, *Le ‘Speculum doctrinale’, Livre III. Étude de la logique dans le Miroir des sciences de Vincent de Beauvais* (PhD-thesis, Université de Montréal, 1971).

<sup>57</sup> On the relation between the Introductions to philosophy and the prologues to Aristotle's works, see A. Fidora, ‘Gundissalinus, Arabic Philosophy, and the Division of the Sciences in the Thirteenth Century: the Prologues in Philosophical Commentary Literature’,

There is a twofold operation of the intellect, as the Philosopher says in book III *On the Soul*. One is the understanding of simple objects, that is, the operation by which the intellect apprehends just the essence of a thing alone; the other is the operation of composing and dividing. There is also a third operation, that of reasoning, by which reason proceeds from what is known to the investigation of things that are unknown. [...] Since logic is called rational science it must direct its consideration to the things that belong to the three operations of reason we have mentioned. Accordingly, Aristotle treats those belonging to the first operation of the intellect, that is, what is grasped by the simple concept, in the book *Categories*; those belonging to the second operation, i.e., affirmative and negative propositions, in the book *On Interpretation*; those belonging to the third operation in the book *Prior Analytics* and the books following it, in which he treats the syllogism absolutely, the different kinds of syllogism, and the species of argumentation by which reason proceeds from one thing to another. And since the three operations of reason are ordered to each other so are the books: the *Categories* to the *On Interpretation* and the *On Interpretation* to the *Prior Analytics* and the books following it<sup>58</sup>.

Even though Aquinas refers to Aristotle, rather than al-Fārābī<sup>59</sup>, there can be no doubt that he thinks and writes in the tradition of the *Guide* and its interpretation of Gerard's Fārābī-translation, founding, as he does, the distinction

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in S. Brentjes and A. Fidora, eds., *Premodern Translation. Comparative Approaches to Cross-Cultural Transformations* (Turnhout: Brepols, 2021), pp. 63–88.

<sup>58</sup> Thomas Aquinas, *Aristotle on Interpretation. Commentary by Thomas Aquinas Finished by Cardinal Cajetan*, tr. J.T. Oesterle (Milwaukee, WI: Marquette University Press, 1962), p. 17 (slightly modified). Original text in Editio Leonina I\*/1, 5: "Sicut Philosophus dicit in III *De anima*, duplex est operatio intellectus: una quidem quae dicitur indivisibilium intelligentia, per quam scilicet intellectus apprehendit essentiam uniuscuiusque rei in se ipsa; alia est autem operatio intellectus componentis et dividit; additur autem et tertia operatio ratiocinandi, secundum quod ratio procedit a notis ad inquisitionem ignotorum [...]. Cum autem logica dicatur rationalis scientia, necesse est quod eius consideratio versetur circa ea quae pertinent ad tres praedictas operationes rationis; de hiis igitur quae pertinent ad primam operationem intellectus, id est de hiis quae simplici intellectui concipiuntur, determinat Aristoteles in libro *Praedicamentorum*; de hiis vero quae pertinent ad secundam operationem, scilicet de enuntiatione affirmativa et negativa, determinat Philosophus in libro *Peri hermeneias*; de hiis vero quae pertinent ad tertiam operationem determinat Aristoteles in libro *Priorum* et in consequentibus, in quibus agitur de syllogismo simpliciter et de diversis syllogismorum et argumentationum speciebus, quibus ratio de uno procedit ad aliud; et ideo secundum praedictum ordinem trium operationum liber *Praedicamentorum* ad librum *Peri hermeneias* ordinatur, qui ordinatur ad librum *Priorum* et consequentes".

<sup>59</sup> Aquinas's refers for the first two operations to Aristotle's *De anima* III, 5, 430a 26–28.

between conceptual, propositional, and syllogistic logic, and their orientation towards demonstrative logic, on the threefold operation of the intellect.

Curiously enough, the *Guide*'s specific interpretation of the division of logic has not only influenced medieval scholars, but also modern ones. Thus, in the recently published *Grundriss der Geschichte der Philosophie*, that is, a modern introduction to philosophy, Peter Schulthess writes about al-Fārābī's *Kitāb iḥṣā' al-'ulūm / De scientiis*: "al-Fārābī mentions three acts wherein one can err: 'ordinari' (*Categories*), 'componere' (*On Interpretation*) and 'conferre' (*Topics, Analytics and Sophistical Refutations*)"<sup>60</sup>. Yet, as we have seen, this is not what al-Fārābī's *Kitāb iḥṣā' al-'ulūm / De scientiis* has, but rather the *Guide*'s interpretation thereof, which proves the success of this interpretation to the present day.

The foregoing remarks on the influence of al-Fārābī's *Kitāb iḥṣā' al-'ulūm* on the philosophical introduction literature of the 13<sup>th</sup> century have shown how complex the processes of reception of newly translated philosophical materials were during the Middle Ages — and beyond — and how the appropriation of their teachings goes hand in hand with a very dynamic interpretation thereof that opens new perspectives. This holds true especially for the systematic interpretation of Aristotle's *Organon* that would shape the European logical curriculum at least until the *Logique de Port Royal* (1662)<sup>61</sup>.

## 5. Conclusions

The influence of al-Fārābī's *Kitāb iḥṣā' al-'ulūm* on Latin medieval philosophy has been profound, far-reaching, and consequential in many ways. The list of philosophers who found in al-Fārābī's theories a valuable resource to shape the way by which sciences were to be considered vastly exceeds the names we mentioned in this study<sup>62</sup>. In addition, it should be recalled that, albeit the most influential, *Kitāb iḥṣā' al-'ulūm* was only one of al-Fārābī's works made available to the Latinate philosophical audience. The impact of

<sup>60</sup> P. Schulthess, 'Rezeption der arabischen Logik', in A. Brungs, V. Mudroch, and P. Schulthess, eds., *Grundriss der Geschichte der Philosophie. 4: Die Philosophie des Mittelalters*, 2 vols. (Basel: Schwabe, 2017), vol. II, p. 1154: "al-Fārābī nennt drei Akte, in denen man irren kann: 'ordinari' (*Kategorien*), 'componere' (*Hermeneutik*) und 'conferre' (*Topik, Analytik und Sophistische Widerlegungen*)".

<sup>61</sup> See O. Höffe, *Aristoteles* (Munich: Beck, 1999), p. 38.

<sup>62</sup> On al-Fārābī and Albert the Great, see, for instance, J. Janssens, 'Albert le Grand et sa connaissance des écrits logiques arabes: une réévaluation du dossier Grignaschi', in J. Brumberg-Chaumont, ed., *Ad notitiam ignoti. L'Organon dans la translatio studiorum à l'époque d'Albert le Grand*, (Turnhout: Brepols, 2013), pp. 225–257.

other texts, like *De intellectu et intellecto* and *Fontes questionum*, is still to be properly investigated, as does much of the influence that a wide web of ‘minor’ Islamicate works have had on the Latinate culture.

Through the translation of *Kitāb iḥṣā’ al-‘ulūm*, al-Fārābī has contributed to shaping Latinate culture remarkably. The socio-cultural dimension of the Toledan translation movement — the selection of what should be translated into Latin following an orderly approach — was grounded in the inspiration that its practitioners (translators but, perhaps, also their sponsors) could find in *De scientiis*. As far as the material availability of texts provides the intellectual possibility of their reception, such inspirational influence can be considered as a crucial factor for the later vicissitudes of the medieval debate. Gundissalinus’s reliance on al-Fārābī in order to ground his expanded epistemic justification of Latinate sciences, extending their number and field of appliance, is a second central aspect displaying the relevance played by al-Fārābī. Gundissalinus’s *De divisione philosophiae* would indeed accompany *De scientiis* as a main source on the division of knowledge. Together, these works impacted the efforts that encyclopaedists, philosophers, and teachers made to understand how knowledge works and should be orderly attained. The *Guide*, Arnulf of Provence’s and pseudo-Peter of Saint-Amour’s introductions, and Aquinas’s prologue to his commentary on *On Interpretation* are examples of the pervasiveness of the influence and role exerted by *Kitāb iḥṣā’ al-‘ulūm* on Latin medieval culture. Yet, notwithstanding its enormous importance, the story of al-Fārābī’s impact on the Latinate tradition remains in great part still to be written.