

INTELLECT, NATURAL PHILOSOPHY, FINALITY: ALBERTUS MAGNUS' ATTEMPT AT A UNIVERSAL SYSTEM OF SCIENCES

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Abstract Albert the Great aimed to construct a universal system of sciences based on the Aristotelian works. In his undertaking, Albert had to face a double challenge. On the one hand, he faced the issue of the natural philosophy (*physica*) as a science of universally valid principles, as the science of changeable bodies. On the other hand, Albert had to argue for the inclusion of the study of the intellect, which does not have any corporeal instrument, within natural philosophy. In this paper, I shall argue that Albert solved these two problems by applying the principle of finality. The medieval author justified the status of the natural philosophy as a universal science as well as the possibility to study the intellect within the natural philosophy from the perspective of their *causa finalis*.

Keywords Natural Philosophy, Finality, Intellect, Albertus Magnus

Around 1250, Albert began what would later be regarded as his life's work, i.e. commenting on all Aristotelian works for the use of his Dominican brothers.¹ In the prologue of *Physica* (1251-1252), he programmatically outlines the intention of his work as well as his system of sciences. Psychology, which plays a prominent role in Albert's work, is regarded as a part of natural philosophy.² The continuity of the human soul, constituted of vegetative, sensitive and rational

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¹ Albertus Magnus, *Physica* l.1 tr.1 c.1, Ed. Colon. 4/1, p. 1, ll. 48–49.

² Albertus Magnus, *Physica* l.1 tr.1 c.4, p. 7, ll. 8–58. Cf. *De anima*, l.1 tr.1 c.1, Ed. Colon. 7/1, p. 1, ll. 30–35: “Licet enim anima et opera eius non sint corpus mobile, quod subiectum est philosophiae naturalis, est tamen anima principium essenziale talis corporis cuiusdam, et ideo in scinetia naturali oportet inquiri de ipsa.”; *De natura et origine animae*, tr.1 c.1, Ed. Colon. 12, p. 3, ll. 7–28, in part. ll. 23–24: “iam in multis naturalibus libris a nobis disputata sunt de anima.”

parts, also entails continuity in the sciences that study those parts, from zoology to metaphysics. Trying to keep such a vast span within one discipline, i.e. psychology, inevitably brings forth some difficulties –methodological issues, such as the place of psychology between natural philosophy and metaphysics³, and other issues regarding the contents of the science, such as the origin of the soul or the relation between the rational soul and its non-rational powers. In this paper I will outline some of these difficulties and suggest a possible solution which may be found in Albert’s works.

In the first part of my paper I sketch the general scheme of sciences adopted by Albert. Physics plays a significant role in that scheme, being “the last and the first” of sciences. It is the last in the order of the universality of sciences, but the first in the order of study, as it concerns things which are adequate to the abilities of our human intellect, limited and bound to matter.⁴ This particularity of physics brings forth a problem: In what sense can physics be called science?, and Might physics be an apodictic science if it deals with the particular and changeable natural world? Albert devotes the second chapter of his *Physica* commentary to these questions. At the end of this part I lay out Albert’s division of physics into disciplines. The division reflects not only his plan to comment on any and every of Aristotle’s *libri naturales*, but of the natural world in its entirety, as he adds substantial material to his Aristotelian comments, and in some cases, whole treatises.

In the second part of the paper I shall address one of the most peculiar problems regarding physics: How does Albert justify the idea, inherited by the Peripatetic tradition, that the intellect is part of the field of natural philosophy? The definition of physics as the science of the movable and the material seems to contradict the definition of the intellect as immaterial and separate from material substance. As if that were not contradictory enough,

³ Cf. Dorothee Werner, “Albert the Great: Psychology between Physics and Metaphysics,” in *Erfahrung und Beweis. Die Wissenschaft von der Natur im 13. und 14. Jahrhundert*, ed. Alexander Fidora and Matthias Lutz-Bachmann (Berlin: Akademie Verlag, 2007), 77–88; Pietro B. Rossi, “Problems of Method according to some Medieval Commentators on Book I of *De partibus animalium*,” in *Erfahrung und Beweis. Die Wissenschaft von der Natur im 13. und 14. Jahrhundert*, 89–124; Theodor W. Köhler, “Sachverhaltsbeobachtung und axiomatische Vorgaben. Zur Struktur wissenschaftlicher Erfassung konkreter Äußerungsweisen des menschlichen im 13. Jahrhundert,” in *Erfahrung und Beweis. Die Wissenschaft von der Natur im 13. und 14. Jahrhundert*, 125–152.

⁴ Albertus Magnus, *Physica* l.1 tr.1 c.1, p. 3, ll. 29–41: “Doctrina enim non semper incipit a priori secundum rem et naturam, sed ab eo a quo facilius est doctrina. ...” Cf. *De intellectu et intelligibili*, tr.1 c.1, Ed. Borgnet 9, p. 478 a: “Sed nequaquam interpretatio somnii, et natura eius bene determinabilis est, nisi prius scito de intellectu et intelligibili, ideo oportet nos hic interponere scientiam de *Intellectu et intelligibili*, licet intelligere animae humane sit proprium praeter corpus. Attendimus enim, sicut saepe protestati sumus, principaliter facilitatem doctrinae: propter quod magis sequimur in traditione librorum naturalium ordinem quo facilius docetur auditor, quam ordinem rerum naturalium”; *De natura et origine animae*, tr.2 c.17, p. 44, ll. 16–20: “Sed in eis quae hic diximus, cum naturalibus metaphysica composuimus, ut perfectior sit doctrina et facilius intelligantur ea quae dicta sunt; haec enim est consuetudo nostra in toto hoc physico negotio.” Cf. Aristoteles, *Physica*, l.1 c.1, 184 a, 17–27.

the nature of the human soul seems to offer an additional challenge. As a genus, the soul is a subject matter for metaphysics, yet as an animating principle of the body it is a subject matter for natural philosophy. Albert tries to integrate these and reconcile the dichotomy.

In both cases, Albert applies the criterion of finality in order to justify the status of natural philosophy as a universal science as well as the possibility to study the intellect within the natural philosophy.

1. *Scientia perfecta*

Albert tries to construct a “perfect” science, or *scientia perfecta*. He aims at complete, extensive knowledge that would account for the natural world. This knowledge should be organized in a systematic and scientific way, as a *scientia naturalis perfecta*.⁵

Albert uses two types of criteria to which a perfect science should correspond.⁶ On the one hand, he outlines a *methodological* requirement to which the exposition should correspond. Since natural science tends to go into detail, it has to be “reduced” to universal notions (*communia*); secondly, those universal notions should be organised in a manner that corresponds to the proper nature of the object under scrutiny.⁷

On the other hand, Albert raises the requirement for *substantial* extensiveness. He aims to cover the full range of scientific knowledge. This claim for extensiveness in content is clearly set up in the prologue of Albert’s commentary on Aristotle’s *Physica*. Here, Albert describes his plan to comment on all of Aristotle’s writings, but his intention goes beyond Aristotle. Albert understands the *corpus Aristotelicum* mainly as a system of knowledge, rather than a textual body.⁸ Thus, he finds gaps in the Aristotelian system that he engages to complement.⁹ According to the plan, the incomplete parts in the Aristotelian corpus, i.e. *partes librorum imperfectas*, can be completed either by digressions in the cases where the body of

⁵ Albertus Magnus, *Physica*, l.1 tr.1 c.1, Ed. Colon. 4, p.1, ll.12–13.

⁶ Theodor W. Köhler, “*Scientia perfecta*. Zur Konzeption philosophischer Erschließung empirischer Gegenstandsbereiche im 13. Jahrhundert,” in *Was ist Philosophie im Mittelalter?* (Miscellanea Mediaevalia 26), ed. Jan A. Aertsen and Andreas Speer (Berlin-New York: De Gruyter, 1998), 749–755, esp. 750; Cf. Silvia Donati, “Alberts des Großen Konzept der *scientiae naturales*: Zur Konstitution einer peripatetischen Enzyklopädie der Naturwissenschaften,” in *Albertus Magnus und der Ursprung der Universitätsidee. Die Begegnung der Wissenskulturen im 13. Jahrhundert und die Entdeckung des Konzepts der Bildung durch Wissenschaft*, ed. Ludger Honnefelder (Berlin: Berlin University Press, 2011), 354–382.

⁷ Albertus Magnus, *De animalibus* XX tr.1 c.1, Ed. Colon. 12, p.1 ll.13–18: “Videtur autem nobis imperfecta adhuc esse doctrina, eo quod ea quae particulariter et sparsa dicta sunt, ad communia non sunt reducta et ex communibus iterum divisione congrua non sunt in propriis naturis determinata. Sic enim perfecta doctrina animalium sufficiens esse videbitur.”

⁸ Mark-Aeilko Aris, “Albertus Magnus,” in *Lateinische Lehrer Europas. Fünfzehn Portraits von Varro bis Erasmus von Rotterdam*, ed. Wolfram Ax (Köln-Weimar-Wien: Böhlau, 2005), 313–290.

⁹ Such completions in the Aristotelian text body are Albert’s treatises *De mineralibus* (Ed. Borgnet 5), *De nutrimento et nutribili* (Ed. Borgnet 9), *De intellectu et intelligibili* (Ed. Borgnet 9).

the text is incomplete or unclear, or by entire treatises, when the lacuna affects a whole branch of knowledge, either because Aristotle omitted that part of knowledge or because his treatise on the subject was lost.¹⁰

Albert's supposition that Aristotle omitted some treatises hints at his project of a full, extensive and structured system of sciences. In the prologue, Albert proceeds to set out the division of sciences, based on the classical Boethian division.¹¹ Albert identifies two types of knowledge: practical and theoretical. The practical, *philosophia moralis*, deals with human actions (*causatur ab opere nostro*). Slightly diverging from Boethius, Albert does not call the theoretical part of philosophy 'theoretical', but 'real', defining it as the study of the deeds of nature within ourselves (*ipsa causatur ab opere naturae in nobis*).¹² *Philosophia realis* is divided into metaphysics, mathematics and physics, or natural philosophy. Metaphysics, also called theology or the first philosophy, is defined by Albert as the science *de ente secundum quod ens*. Thus he sides with Avicenna and is one of the first Latin authors to promote the notion of metaphysics as the science of being *qua* being.¹³ In his description of the subject matter of each branch of *philosophia realis*, Albert adopts Boethian definitions.¹⁴ Metaphysics is the science of being conceived without matter and motion; mathematics is conceived with matter

¹⁰ Albertus Magnus, *Physica*, l. 1 tr. 1 c. 1, p. 1, ll. 23-41: "Erit autem modus noster in hoc opere Aristotelis ordinem et sententiam sequi et dicere ad explanationem eius et ad probationem eius, quaecumque necessaria esse videbuntur, ita tamen, quod textus eius nulla fiat mentio. Et praeter hoc digressiones faciemus declarantes dubia suborientia et suppletentes, quaecumque minus dicta in sententia Philosophi obscuritatem quibusdam attulerunt. Distinguemus autem totum hoc opus per titulos capitulorum, et ubi titulus simpliciter ostendit materiam capituli, significatur hoc capitulum esse de serie librorum Aristotelis, ubicumque autem in titulo praesignificatur, quod digressio fit, **ibi additum est ex nobis** ad suppletionem et probationem inductum. Taliter autem procedendo libros perficiemus eodem numero et nominibus, quibus fecit libros suos Aristoteles. Et **addemus etiam alicubi partes librorum imperfectas et alicubi partes intermissos vel omissos, quos vel Aristoteles non fecit vel forte si fecit, ad nos non pervenerunt.**"

¹¹ Boethius, *Theological Tractates, De Trinitate II* (London: Heinemann, Cambridge (MA): Harvard University Press, 1973), 8–9. Cf. James A. Weisheipl, O.P., "The Nature, Scope, and the Classification of the Sciences," in *Science in the Middle Ages*, ed. David C. Lindberg (Chicago-London: The University of Chicago Press, 1978), 461–482, esp. 470–471.

¹² Albertus Magnus, *Physica*, l. 1 tr. 1 c. 1, p. 1, ll. 43–45.

¹³ Cf. Jean-François Courtine, *Suarez e le système de la métaphysique* (Paris : PUF, 1990), 560, 25. See also Albert Zimmermann, *Ontologie oder Metaphysik. Die Diskussion über den Gegenstand der Metaphysik im 13. Und 14. Jahrhundert* (Recherches de Théologie et Philosophie Médiévale – Bibliotheca, 1) (Leuven: Peeters, 1998).

¹⁴ In his detailed study, Amos Bertolacci indicates as sources for Albert's division of sciences Avicenna, Boethius, Gundissalinus, Kilwardby. Amos Bertolacci, "La divisione della filosofia nel primo capitolo del Commento di Alberto Magno alla Fisica: le fonti avicenniane," in *La divisione della filosofia e le sue ragioni. Lettura di testi medievali (VI–XIII secolo). Atti del Settimo Convegno della Società Italiana per lo Studio del Pensiero Medievale (S.I.S.P.M.) (Assisi, 14–15 novembre 1997)* (Schola Salernitana. Studi e testi, 5), ed. Giulio D'Onofrio (Avigliano: Cava de' Tirreni, 2001), 137–155.

and motion according to the actual being of the objects, but in accordance with their definition; the object of physics, in the end, is conceived with matter and motion in being and definition.

Scientia perfecta was Albert's final goal when he drew his scheme of sciences in his comment on *Physica*, and in composing the corresponding comments or treatises afterwards.

2. The Division of Physics: Comprising Singularity of Beings and Universality of Intellect

2.1. The Problematic Place of Physics in the System of Sciences

Albert's scheme on the division of philosophy might be neat and concise, but, according to Aristotle in *Posterior Analytics*, a science must be built on logical structures in order to be demonstrative.¹⁵ Physics, which by definition deals with matter and things in motion, must find a way to be demonstrative, unlike mathematics or metaphysics. Aristotle in fact accounts for that problem and solves it by "cutting out" the changeability and individuality of things inherent in their material condition. Aristotle sees physics as the science that deals with the grounds, i.e. the unchangeable reasons of mutable beings and proceeds to discuss the number of the principles of nature that should be established.¹⁶

Despite his strong claim for apodictic scientific knowledge, Aristotle gave hints for justifying the knowledge of nature as scientifically valid,¹⁷ and Albert, who had a sensibility for the curiosities and the wonders of the natural world, was attentive enough to pick these up. In fact, Albert is famous for his natural interests, for his attention to the details in nature, and he was probably often "in the field", examining falcons or fish, or talking to common people, falcon trainers or, as he claims, midwives. In *De animalibus* he discusses all possible topics, details and curiosities from the natural world. His interest in the singular and mutable natural being – in its regularity as well as in its peculiarity – is noteworthy. Such is the case of *De animalibus*, in which Albert discusses why some animals hibernate during winter or migrate; he explains it with the lack of food during winter. At this point, with some very loose connection to the topic, he tells a story that apparently made a certain impression on him: "I saw a woman in Cologne who often didn't eat for 30 or sometimes 20 days,"¹⁸ and, in the same train of thought, he also tells of a melancholic man he saw who did not eat for seven weeks and drank once a day, or every other day; there had been certain testimonies that he often did that for as

¹⁵ Aristoteles, *Analytica Posteriora*, l.1 c.2, 71 b 9–25, here 20–25: "Now if knowledge is such as we have assumed, demonstrative knowledge must proceed from premises which are true, primary, immediate, better known than, prior to, and causative to the conclusion. On these conditions only will the first principles be properly applicable to the fact which is to be proved. Syllogism indeed will be possible without these conditions, but not demonstration; for the result will not be knowledge."

¹⁶ Aristoteles, *Physica*, l.1 cc. 2–6.

¹⁷ E.g. Aristoteles, *Analytica Posteriora*, l.1 c.2, 71 b 9–25; 75 b 21–36; 94 a 20 – 96 a 19.

¹⁸ Albertus Magnus, *De animalibus*, l. 7 tr. 3 c. 3, p. 564, ll. 35–36: "ego vidi mulierem in Colonia, quae saepe sine cibo remansit per XXX dies et aliquando per XX."

long as four or five weeks.¹⁹

Albert's characteristic curiosity for the detailed and mutable natural world is reflected in his theoretical writings as well, and he takes a turn towards defining physics in a more empirical manner, i.e. without necessarily referring to its universal reasons:

For this reason all the natural things have material definitions; they are defined by the sensitive and subjected to motion matter, because the essential [parts] of the natural thing that have to be taken into its definition, are such that are subjected to motion and sensitive qualities. Since if they are rendered by the intentions common to the genus and the [specific] difference that are taken as something abstract, in the universal according the reason of the simple being; then it would be clear that they are logical and thus, in respect to the matters of physics, completely vane.²⁰

All natural things have "material definitions", and – Albert repeats – all natural things are defined by their sensible matter, which is subject to motion. What is more, Albert explicitly claims that, should physics turn to the universal principles of nature in its inquisition, it would fail at its very scope of grasping the natural world – it would become vain, *vanae*. The universal being is insufficient to account for the singular being: *Universale autem ut universale non est sufficiens causa particularis*.²¹ The singular being, however, cannot account for a universal or apodictic science. To postulate matter as a principle of a definition requires, at the least, a further explanation. Albert, following in Aristotle's footsteps, insists that the study of natural things always begins with matter, but it in fact deals with the natural things in their species, rather than this or that thing, "as when we consider wood in its being and definition as wood and not as far as it is this wood, i.e. this cedar or this palm tree."²² It is, nevertheless, a challenge to see how Albert reconciles the necessity of studying the universal and the abstract (*omnis scientia de universali est*) with the statement that the universal is insufficient for the understanding of the natural world (*quod enim scitur tantum in communi, scitur imperfecte et*

¹⁹ Ibid., p. 564, 34 sqq.

²⁰ Albertus Magnus, *Physica*, l. 1 tr. 1 c. 1, p. 2, ll. 39–48: "Propter quod omnia naturalia diffinitiones habent materiales; per materiam enim sensibilem et motui subiectam diffiniuntur, quia essentialia rei naturalis, quae in diffinitione ponenda sunt, talia sunt, quod motui et sensibilibus qualitatibus sibiiciuntur. Si enim darentur per intentiones communes generum et differentiarum, quae abstracta in universali secundum rationem simplici accipitur, manifestum esset, quod tunc essent logicae et ideo quoas physicum negotium essent vanae omnia."

²¹ Albertus Magnus, *De caelo et mundo*, Ed. Colon. 5/1, l.1 tr.3 c.4, p. 64, 87–89.

²² Albertus Magnus, *Physica*, l. 1 tr. 1 c. 2, p. 5, ll. 8–17: "Est autem abstractio universalis ab hoc particulari signato, sicut quando consideramus lignum secundum esse ligni et rationem et non in eo quod est hoc lignum, quod est haec cedrus vel haec palma. Et talem abstractionem in omni scientia oportet esse, quoniam omnis scientia de universale est, sive illud secundum intentiones communes accipiatur, quod est intendere logice, sive accipiatur secundum naturam et esse physicum, quod est intendere physice et per propria rei."

*in potentia, perfecta autem est cognitio de re, quae habetur per propria eius.*²³) In this sense, Albert expresses a *sui generis* rule of falsifiability in *Physics*, a methodological position that the senses and sense experience should confirm and not contradict the knowledge attained from the principles of a given matter.²⁴ Perfect knowledge of a thing takes into consideration its individual dimension with its particular details, i.e. a complete knowledge of a thing cannot be *in communi*, cannot simply be a knowledge of its universal *rationes*. Albert does not doubt the scientific nature of physics which studies things in matter as abstracted from their matter,²⁵ and yet, he also places an undeniable emphasis on the particular and individual details of the natural world. Perfect knowledge of a physical being comprises the thing itself with its particular characteristics.²⁶

2.2. Division of Natural Philosophy into Singular Sciences

It is the subject matter of the science that stands at the centre of Albert's division of physics.²⁷ In *Physics*, chapter 4, Albert develops his description of natural science, begun in chapter 1 on the basis of his intention to comment on Aristotle in full – and, moreover, to develop a *complete* scientific system (*scientia perfecta*). I shall briefly outline the divisions that Albert makes within the natural science by way of an overview of his system of the sciences. He starts from a theoretical division of the subject matter and offers each branch of knowledge an appropriate tractate or commentary work.

The subject matter of natural philosophy is the movable material body. It is discussed either in general or in its movement towards matter. In the latter case it is either simple or mixed and composite. As for the simple body, it can be moved either towards a certain place (*De caelo et mundo*), or towards a form (*De generatione et corruptione*). The simple body moved towards a place is discussed either in its own right (i.e., *De caelo et mundo*), or in

²³ Albertus Magnus, *De cael hier.*, c. 5, p. 81, ll. 27–29.

²⁴ Albertus Magnus, *Physica*, l. 8 tr.2 c.2, p. 587, ll. 40–45: “Omnis autem acceptio, quae firmatur sensu, melior est quam illa quae sensui contradicit, et conclusio, quae sensui cotradicit, est incredibilis, principium autem, quod experimentalis cognitioni in sensu non concordat, non est principium, sed potius contrarium principio.” On the role of experience and observation in natural science in Albert the Great, cf. Leen Spruit, “Albert the Great on the Epistemology of Natural Science,” in *Erfahrung und Beweis. Die Wissenschaft von der Natur im 13. und 14. Jahrhundert* ed. Alexander Fidora and Matthias Lutz-Bachmann (Berlin: Akademie Verlag, 2007), 61–76.

²⁵ Albertus Magnus, *Physica*, l. 1 tr.1 c.2, p. 4, 35–36: “Nos autem de physicis dicimus esse scientiam et demonstrationem.”

²⁶ Cf. Albertus Magnus, *Quaest. sup. De animal.*, l.1 qu.1, p. 77, 39–78, 25; *De princ. motus princ.*, tr. 1, c. 2, p. 77, ll. 44–47: “non enim sufficit scire in universali, sed quaerimus scire unumquodque, secundum quod in propria natura se habet; hoc enim optimum et perfectum est genus sciendi”; *De cael hier.*, c. 5, p. 81, ll. 27–29: “quod enim scitur tantum in communi, scitur imperfecte et in potentia, perfecta autem est cognitio de re, quae habetur per propria eius.”

²⁷ Albertus Magnus, *Physica*, l. 1 tr. 1 c. 4, p. 6, ll. 41–43: “volumus ex divisione subiecti, quod induximus, ostendere libros omnes scientiae naturalis”.

respect to the form receiving its imprints; in this second case the object of study is either those imprints on the form (*De causis proprietatum elementorum et planetarum*) or the habitude of the place (*De longitudine et latitudine terrarum et civitatum et de locis habitabilis*). Natural philosophy thus becomes more complex considering its other branch, the study of *corpus compositum*; the scholar is interested either in its composition as it is happening (*Quattuor libri Meteororum*), or its composition as inherent in its genus or species. In this latter case we have either the physics of inanimate bodies (*De mineralibus*), or of animate bodies. There we could study either the soul as such with its parts (*De anima*), or its operations in the body, in which case we could study either the soul's operation *per se* (*De causa vitae et mortis et causis longioris vitae*), or according to its potencies: *vegetativa*, *sensitiva* and *intellectiva*. The vegetative soul, with respect to its main functions, is discussed in two treatises (*De generatione*, *De nutrimento*); the sensitive soul is responsible for sense of perception and movement, and correspondingly the works dedicated to it are *De somno et vigilia*, *De sensu et sensato*, *De memoria et reminiscentia*; *De motibus animalium*, and *De respiratione et inspiratione* (as long as inhaling and exhaling are specific movements, i.e. of the air in the lungs). There is only one concise text, *De intellectu et intelligibile* – and this is a non-commentary – dedicated to the intellectual soul. The natural science is completed by two general works, *De vegetabilibus* and *De animalibus*; the latter work is, in Albert's words, the final goal of natural science: *Et ille liber est finis scientiae naturalis*.²⁸

This account provides insight into Albert's methodological attitude towards the division of sciences: the system of natural philosophy has a goal, *finis*, towards which it is developing. The scientific discourse moves from the simple to the more complex and composite matters,²⁹ resulting in the fact that *De animalibus*, a book full of curiosities and particularities, is the completion of natural philosophy.

2.3. Physics and Intellect

Albert sees the extensiveness of physics, i.e. its capacity to account for the whole natural world from the orbs to the intellect and from the universality of generation and corruption to the multifariousness of *De animalibus*, as a virtue rather than a problem. Here, he does not even raise the question of how the immaterial intellect could still be part of natural philosophy, having, by definition, the *corpus mobile* as its object. In fact, the part of physics that studies the intellect is an addition to Aristotle's division of sciences, and similarly, *De mineralibus* and *De nutrimentu et nutrito* are also additions. In the latter cases, Albert believed that Aristotle could have written those treatises, but that these just didn't occur to him; in the case of intellect, however, he was aware that he was amplifying the canon. In doing so, he was following the peripatetic tradition and using already existing works like *De differentia spiritus et animae* by the Syrian author (10th c.) Costa ben Luca or Al-Farabi's *De intellectu et intellect*,³⁰ but Albert

²⁸ Ibid., pp. 6–7, ll. 52–64, hic: p. 7, ll. 63–64.

²⁹ Albertus Magnus, *De animalibus*, l.1 tr.1 c.1, pp. 1–2, ll. 8–7.

³⁰ *De differentia spiritus et animae* was translated from Arabic in the second half of 12th century in Toledo by John of Seville. Cf. Miguel de Asúa, "War and Peace: Medicine and Natural Philosophy in Albert the

was nevertheless the one that included the teaching of the intellect within natural study, almost without giving it a second thought, and thus preparing the floor for countless discussions on the place of *scientia de anima* in the next century.³¹

Albert returns to the question of the intellect as a part of the natural science in his *De animalibus*, written approximately 10 years after the *Physica* commentary. There, he explicitly raises the question of why a natural science should be concerned with immaterial entities like the soul, or even the intellect.

When somebody examines the natures of living being according to what we have said, maybe they would doubt if the natural philosopher should speak of every natural soul in general, or of some singular soul which is principle of the generated and corruptible animals; because if he [the natural philosopher] should speak about every soul, there wouldn't be any difference in this respect between him and the first universal philosopher, who speaks about the souls of the [celestial] sphere, because the understanding of first philosopher seeks science of those that are truly understandable, but if the natural philosopher seeks them, he wouldn't find among them that diversity.³²

Albert frames the question as follows: does the natural philosopher need to consider the soul as such, i.e. as a genus, or in its particularity? In case we opt for the first solution, i.e. if we discuss the soul in the frame of its general definition, it would fall under the consideration of metaphysics. However, natural philosophy focuses on the singular and should therefore regard the soul as a principle of the animate material body and its organs, "because the superior entities live with a more noble soul, which is not principle of animals."³³ Here the

Great," in *A Companion to Albert the Great* (Brill's Companions to the Christian Tradition, 38), ed. Irvin M. Resnick (Leiden–Boston: Brill, 2013), 269–298, esp. 278, 280. James A. Weisheipl, O.P., "Appendix 1. Albert's Works on Natural Science (libri naturales) in Probable Chronological Order," in *Albertus Magnus and the Sciences. Commemorative Essays 1980*, ed. James A. Weisheipl (Toronto: Pontifical Institute of Medieval Studies, 1980), 565–577, esp. 571. Farabi, *Epistola sull'intelletto*, transl. by Francesca Lucchetta (Padova: Editrice Antenore, 1974).

³¹ Cf. Sander de Boer, *The Science of the Soul. Commentary Tradition on Aristotle's De anima, c. 1260 – c. 1360* (Ancient and Medieval Philosophy – Series 1, N. 46) (Leuven: Leuven University Press, 2013).

³² Albertus Magnus, *De animalibus*, I, l. 11 tr. 1 c. 3, Ed. Hermann Stadler (Beiträge zur Geschichte der Philosophie des Mittelalters. Texte und Untersuchungen, Bd. 15) (Münster: Aschendorff, 1916), p. 774, ll. 18–27: "Quando autem aliquis consideraverit in naturis animalium secundum quod diximus, dubitabit fortasse, utrum naturalis philosophus dicere debeat de omni anima naturali in genere, aut de anima aliqua singulari quae principium est animalium generatorum et corruptorum, quoniam si loqui debeat de omni anima, nulla quoad hoc erit diversitas inter eum et philosophum universalem primum, qui loquitur de animabus orbis, eo quod intellectus philosophi primi quaerit scientiam eorum quae vere intellectiva sunt, et si eadem quaerit naturalis philosophus, non est inter eos quoad hoc diversitas."

³³ *Ibid.*, p. 775, ll. 17–18: "quia superiora vivunt nobiliori anima, quae non est principium animalium."

problem of particularity arises once more, at least in regard to methodology. Should the natural philosopher start from the singular material phenomena, or from their principles? Albert makes a considerable effort to reconcile both approaches. On the one hand, he praises the universality of mathematics or astronomy that are able to describe their objects in an unchangeable manner: a right angle always equals the sum of the other two angles in a triangle; the sun and the moon always follow the same, mathematically predictable orbit. Natural philosophy, it seems, fails to make a cause and effect argument. Albert's resolute answer is that the natural philosopher actually does, but also should, narrate from the phenomena towards their causes, "as we have done in the previous ten books."³⁴

Albert's way of studying the natural world of particular and changeable matter is to consider it *not* from the viewpoint of the causes that bring the thing into existence (*causa formalis, materialis, efficiens*), but from the perspective of that cause which corresponds to the proper method of natural knowledge, i.e. from the end effect to the cause. Such a perspective is granted by the final cause. Albert takes up Aristotle's argument from *Physics* (194 b 30), where he says that there are some cases in which the actualizing cause is the final one, as is the case of healing; healing is actualized by health which is the end of the process, but not inherent to it. Albert applies the same principle to natural philosophy: in the case of the movable and changeable non-necessary things, the only thinkable necessity is final, and not at its origin.³⁵

The soul is precisely this kind of cause in respect to its animated body, i.e. it is a final cause. Albert regards the form, i.e. the soul, as the final cause that transforms the body and its organs. The soul – and in the case of man, the intellect – is, we might say, the ontogenetic principle which forms the body in the way it must be formed. The human hands would be one example. They are apparently formed by the intellect, since hands allow us to act intelligently (to write, or to perform fine mechanical tasks), unlike an animal's paws, formed by their sensible (not intelligible) soul.³⁶ The soul is the *propter quid*, the final reason why something looks and is the way it is.

It is in the very passage quoted above that Albert makes the argument to defend the

³⁴ Ibid., p. 765, ll. 11–25: "Si autem de hiis tractandum et dicendum generaliter et communiter, tunc oportet inquiri utrum naturalium sit consideratio sicut est mathematicorum aut astrologorum, quae in altera parte coniungitur physicae, sicut ostensum est in secundo nostrorum Physicorum. Hii eum primo ponunt ea de quibus inquiritur, sicut lunae aut solis defectum, aut triangulum habere tres duobus rectis aequales angulos, et postea adiungunt causas istorum quae sunt media demonstrationum. Sic igitur quaeratur, utrum physicus de communibus animalium loquens debet considerare res naturales et manifestas operationes et passiones communium modorum specierum animalium, et post debet assignare causas de eis, an e contrario sit sibi procedendum in rebus quas narravimus. Supponamus autem ex omnibus inductis, quod prius narranda sunt ea quae sunt manifestarum operationum et passionum animalium, sicut fecimus in omnibus decem praeinductis libris."

³⁵ Ibid., pp. 766–767, ll. 29–6: "et sic necessarium suppositionis est ad omnibus ad finem ordinatis."

³⁶ Albertus Magnus, *De animalibus*, l.21 tr.1 c.1 n.2, p. 1321, 30–32; p. 1322, 7–16 et p. 1322, 39–1322, 4; *Metaphysica* l.7 tr.4 c.3, Ed. Colon. 16/2, p.372, 10f.; *De nat. et orig. an.* tr.1 c.6, p.13, 67–71.

scientific nature of physics. In the same manner as the soul is the *propter quid* of a living body, physics is the *propter quid* of the knowledge of the natural world. According to Albert, if we were to posit a necessity in the natural world *at all*, it would be the necessity of the purpose for which the natural processes evolve.

And so we have to formulate our philosophical discourse according to that disposition, saying that in the living beings **it is the soul which is the cause which is called “because of something”, or “final”**. What is the physical body part, is necessarily because of those things we have mentioned, i.e. form and end. And what we call necessity in physics demonstrates and shows that **what is in physics, is only because of something, for otherwise it would not have any necessity**. And so, that because of which has happened that what occurs in physics, is its ultimate complement and end.³⁷

In his fundamental article on suppositional necessity in Albert the Great, i.e. the conditional necessity depending on an end and directed towards it, W. A. Wallace³⁸ elaborates the argument by first briefly describing it in the structured and detailed manner that can also be found in Thomas Aquinas; Wallace then returns to Aristotle and points to the passages from *Posterior Analytics* and *Physics*³⁹ from which the idea of suppositional necessity had been derived. In doing so he opens up a space in which Albert’s commentaries played a significant role in the elaboration of suppositional necessity and its transmission to Thomas. Aquinas involves the *ex suppositione finis* type of necessity, which is not so much absolute but rather conditional, understood as “the demand for whatever may be required to achieve a certain end.” Thomas uses it to prove the necessity in natural philosophy, a step which was not undertaken by Aristotle himself.

On the grounds of textual evidence, Wallace makes the claim that Thomas was most probably influenced by Albert when he developed the concept of necessity *ex fine* in natural

³⁷ Albertus Magnus, *De animalibus*, I, l. 11 tr. 1 c. 3, p. 779, ll. 23–32: “Nos igitur etiam nostrum philosophicum sermonem debemus formare secundum hanc dispositionem dicendo quod in animalibus **anima est quae est causa quae vocatur propter quam sive finalis**: et hoc quod est physicum corpus et membrum, est necessario propter res istas quas diximus, quae sunt forma et finis: et id quod vocamus necessitatem in physicis, ostendit et significat, quod **hoc quod est in physicis, non est nisi propter quid, quia aliter nullam omnino haberet necessitatem**. Illud igitur propter quod erit id quod fit in physicis, est ultimum complementum et finis.”

³⁸ William A. Wallace, O.P., “Albertus Magnus on Suppositional Necessity in the Natural Sciences,” in *Albertus Magnus and the Sciences*, cit., ed. James A. Weisheipl, 103–128. Cf. Pietro B. Rossi, “Problems of Method according to some Medieval Commentators on Book I of the *De partibus animalium*,” in *Erfahrung und Beweis*., cit., ed. Alexander Fidora and Matthias Lutz-Bachmann, 89–124, in part. 118–121.

³⁹ William A. Wallace refers to the passages of *Posterior Analytics* where the criteria for scientific knowledge are discussed and determined, c. 8, 75 b 21–36, and cc. 11–12, 94 a 20 – 96 a 19, and *Physica*, I. 2 c. 9, 199 a 33 – 200 a 16. William A. Wallace, “Albertus on Suppositional Necessity”, cit., 106 – 111.

philosophy. Another point, not discussed by Wallace, supports the idea that this might have been the case in Albert's comment on *Nicomachean Ethics*, predating his *Physica*-commentary. Albertus Magnus' commentary, *Super Ethica*, was made as a lecture course that was written down by his then-assistant Thomas Aquinas. Given that ethics, like natural philosophy, is another discipline that explored the contingent world, i.e. human operations, Aristotle saw the need to briefly elaborate on its possibility of being a science in the beginning of *NE*.⁴⁰ Albert, in turn, seizes the opportunity and decides that finality is the structuring principle: the sciences are ordered in accordance with a supreme end.⁴¹ Nevertheless, within this structure, each instance has a perfection – a reason to be – in its own right.⁴² If physics is to be a complete science, a *scientia perfecta*, it should account for the entire spectrum of the human being, and it should include the immaterial intellect.⁴³

In *Physica*, later on, Albert found the exact wording to make the argument for suppositional necessity and he applied it in a systematic manner in *De animalibus*.

3. Conclusion: Albert and the Natural World

Albert the Great's strategy for integrating both intellect into physics, and physics into the model of necessary sciences is to regard them in their finality, *ex finis suppositione*. The soul is a subject matter of physics not as just one of the causes of the human being, but as its final one. Respectively, the universality of physics as a science is granted not by the fact that it studies the originating causes of things (material, formal, efficient), but their final cause. Natural science, in contrast to apodictic sciences like mathematics, opens the discussion with the phenomena and proceeds to their causes. In the same way, as a final cause of the living

⁴⁰ Aristoteles, *Ethica Nicomachea*, 1097 a 23–25: “it is for the sake of the end that everything is done”; and 1098 a 27–29: “we must not look for equal exactness in all departments of study, but only such as belongs to the subject matter of each.”

⁴¹ Albertus Magnus, *Super Ethica*, l. 1, lectio 7, p. 35, ll. 17–20: “sicut se habent scientiae, ita fines scientiarum; sed, sicut in principio Metaphysice dicit Philosophus, scientiae contemplative sunt meliores practis; ergo et fines finibus.”

⁴² *Ibid.*, pp. 32–33, ll. 74–9: “Dicendum, quod summum dicitur dupliciter: vel simpliciter, et sic est unum tantum, quod est deus; et sic non quaeritur hic. Vel summum alicui, et hoc est, ad quod ordinantur omnes operationes propriae illius rei; et sic quaeritur hic summum bonum hominis, et ad quod ordinantur omnes operationes propriae quae sunt eius, in quantum est homo, non autem operationes communes vel aegritudinales. Natura autem hominis, per quam homo est homo, potest dupliciter considerari: aut secundum se, et sic est rationalis, aut secundum suam summitatem, qua attingit intellectum, quia ratio creatur in umbra et horizonte intelligentiae, et sic est intellectualis. [...] Et sic secundum duo sunt summe bona hominis, quorum tamen unum ordinatur ad alterum, scilicet civilis ad contemplativam.”

⁴³ Albertus Magnus, *De intellectu et intelligibili*, l.1 c.1, p. 477a: “Sicut a principio istius operis diximus, scientia de anima non satis complete habetur ex hoc quod de anima secundum seipsam in libro de Anima determinatum est. Oportet enim cum hoc scire de objectis quae proprias partibus animae inferunt passiones.”

body, the intellect can fall under the consideration of natural philosophy. Finality as a principle of necessity is Albert's original contribution to the complex and fruitful discussions on the inclusion of the intellect into physics, and of physics among sciences.

Albert is credited as the first medieval author to construct a new scheme of the sciences. He argued that the intellect, which he regarded as the highest and fully immaterial part of the human soul, i.e. as the divine spark within us, should be studied from a natural perspective. Albert was the scholar who provided later authors with the idea of focussing on the natural approach in the study of the soul. When reading the writings of Albert, it becomes quite obvious that he would combine those dissimilar arguments, thus confounding all of the Aristotelian commentators. Those two pillars found their natural bond in Albert's writings. On the one hand, Albert was inspired by the magnitude of the human soul,⁴⁴ by its capacity to transcend the material world starting from its natural premises. On the other hand, he shares a rare personal dedication to the marvels of the natural world that he observes, experiments, describes and analyses. In a world given to our senses and reason to marvel at, the intellect is both the noblest part of the natural world, and, at the same time, a bond to the divine. Starting from this personal premise, this was the task to which Albert dedicated his life's work: the scientific systematizing of the natural world.

⁴⁴ Cf. Markus L. Führer, "The Contemplative Function of the Agent Intellect in the Psychology of Albert the Great," in *Historia philosophiae Medii aevi. Studien zur Geschichte der Philosophie des Mittelalters*, Festschrift für Kurt Flasch zu seinem 60. Geburtstag, B. 1, ed. Burkhard Mojsisch and Olaf Pluta (Amsterdam–Philadelphia: B. R. Grüner, 1991), 305–319, esp. 305: "... a man like Albert who possessed a deep sense of the spiritual dignity of the soul."

