1. Introduction

The concept of ‘plastic nature’, advanced by the Cambridge Platonist Ralph Cudworth (1617–1688), is well known in the history of philosophy. It drew considerable attention from such great minds of the time as Gottfried Wilhelm Leibniz (1646–1716). By contrast, the notion of ‘plastic force’, the germ of Cudworth’s idea, remains scarcely studied by historians. In its Latin form, the term ‘formative power’ (virtus formativa) was frequently used in embryological discussions among medieval scholastics. Its origin can be traced back to Galen (129–ca. 216). Using terms such as ‘mould’ (διαπλάττειν) and ‘moulding’ (διάπλασις) in his embryology, the Greek physician formulated the expression ‘moulding faculty’ (δύναµις διαπλαστική). For him, this faculty or force, which cannot be reduced to the qualities of the four traditional elements (fire, air, water and earth), is responsible for a series of highly complex actions in the formation of living beings. It also holds a key to grasping the origin of the soul of these beings, that is, the mechanism of their animation or ensoulment. Although Galen’s conception itself has not come...
under the scrutiny of specialists, it is reasonable to say that his theory stimulated the later development of similar ideas in the Western intellectual tradition.

The Galenic concept of moulding faculty was transmitted to the Latin world especially through the work of the Persian physician Avicenna (980–1037). He mentioned ‘formative power’ (quwwa muṣawwira), principally in three chapters of his extremely successful medical summa, the Canon. These chapters deal, respectively, with the dominant natural faculties, the formation of seeds, and the generation of the foetus. To this list must be added the treatise On Animals, the eighth book of the natural philosophical part of Avicenna’s masterpiece, the Shifā. This treatise, which mainly consists of a paraphrase of Aristotle’s biological works, was translated into Latin by Michael Scot (ca. 1175–ca. 1234).

Besides Galen and Avicenna, it is also necessary to refer to the role played by Averroes (1126–1198), the Commentator. He mentioned the formative power discussed by ‘physicians’ not only in his medical work, the Colliget (Kulliyyyāt), translated into Latin in 1285, but also in his philosophical writings such as the Commentary on Aristotle’s On Animals and the Long Commentary on Aristotle’s Metaphysics.

Under the authority of these writers, the Latin scholastics naturally adopted the idea of a moulding force by the name of ‘formative power’ (vīrōtus formativa) or ‘informative power’ (vīrōtus informativa). The distinction between these two was not always clear due to the obscure word choice

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5 See Averroes, Colliget, 2.10, Venezia 1562, repr. Frankfurt am Main 1962 (Opera omnia, suppl. 1), 22G–23M (and M.C. Vázquez de Benito and C. Álvarez Morales, Abū-l-Walīd Ibn Rusd [Averroes]: El libro de las generalidades de la medicina [Kitāb al-Kulliyyyāt fil-tibb], Madrid 2003, 92–93); Id., In De animalibus, XVI.3, Venezia 1562, repr. Frankfurt am Main 1962 (Opera omnia, 6), 75B–77C; Id., In Metaphysicam, VII.31 and XII.18, Venezia 1562, repr. Frankfurt am Main 1962 (Opera omnia, 8), 180E–181L and 303D–305I. Besides Galen and Avicenna, one of the main sources of Averroes’s theoretical elaboration seems to be the discussion of Avempace (?–1139) in his Paraphrase of Aristotle’s De anima. See Avempace, Ibn Bāja Muhammad ibn Yahya ibn As-Sā‘īṣh (d. 533/1139): Kitāb al-Nafs (Treatise on the Soul), transl. Muhammad Saghîr Hasan Masûmî, Karachi 1961, repr. Frankfurt am Main 1999 (Islamic Philosophy, 75), 29–42.
in the Latin translation of Avicenna’s *Canon*. Among the scholastics, Albert the Great (ca. 1193–1280) is known for his extensive use of the notion of ‘formative power’. He generalised this notion to apply it not only to biological issues but also to physics in general, including the formation of minerals and fossils. After Albert, frequent references to this power can be observed in scholastic discussions on the generation of natural things.⁶

This is the broad historical context in which the treatise entitled *On Formative Power (De virtute formativa)* must be integrated. This small work of six leaves in-folio was written by the emblematic figure of Ferrara’s medical humanism, Nicolò Leoniceno (1428–1524).⁷ It was first published in Venice in 1506 and was reedited there in 1524 with some works of Galen in Latin translation. Then it was included in Leoniceno’s collected works (Basel 1532), assuring a wider transalpine diffusion. As one of the first embryological monographs of the Renaissance, *On Formative Power* presents both the continuity of the medieval Arabo-Latin tradition and the new elements furnished by Renaissance humanism with a philological orientation.⁸ It thus stands at the crossroad of these two currents.

In a previous study, I have shown that Jean Fernel (1497–1558), the very influential French physician of the Renaissance, was inspired by Leoniceno’s work to compose his own medico-philosophical masterpiece, *De abditis rerum causis* (Paris 1548).⁹ Fernel’s text, widely read until the

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mid-seventeenth century, enabled themes discussed by Leoniceno to exert a hitherto unsuspected impact on embryological speculations as well as on medical and philosophical debates related to the origin of the soul in the early modern period. The present study aims to analyse the range of Leoniceno’s discussions and to determine his sources. It will bring to light an early phase in the evolution of the concept of formative power, which was to culminate in the theory of ‘plastic nature’ at the heart of the Scientific Revolution.\footnote{See H. Hirai, ‘The Invisible Hand of God in Seeds: Jacob Schegk’s Theory of Plastic Faculty,’ \textit{Early Science and Medicine}, 12 (2007), 377–404; Id., ‘Atomes vivants, origine de l’âme et génération spontanée chez Daniel Sennert,’ \textit{Bruniana & Campanelliana}, 13 (2007), 477–495; and Id., ‘Interprétation chymique de la création et origine corpusculaire de la vie chez Athanasius Kircher,’ \textit{Annals of Science}, 64 (2007), 217–234.}

2. Galen: The Vegetative Soul and Innate Heat

In his \textit{On Formative Power}, Leoniceno first explains the motive for its publication. In a letter from a friend, he was asked to teach the views of Galen and Aristotle on the true nature of the formative power. On this occasion, a printer proposed him to publish his translation of Galen’s works. Leoniceno did not want to make his friend wait, so he decided to put his small work into press separately in the guise of an open letter. He warns his readers that this question contains ‘numerous and almost inexplicable ambiguities’ because Aristotle and Galen did not give a clear-cut answer on the issue. Leoniceno also admits to focusing on the opinions of Averroes and the Conciliator, Peter of Abano (1257–ca. 1315), rather than accumulating testimonies from multiple authors. In his view, these two men enjoy considerable fame among philosophers and physicians.\footnote{On Peter of Abano, see S. Ferrari, \textit{I tempi, la vita, le dottrine di Pietro d’Abano}, Genova 1900 (Atti della R. Università di Genova, 14); B. Nardi, \textit{Saggi sull’Aristotelismo padovano dal secolo XIV al XVI}, Firenze 1958 (Studi sulla tradizione aristotelica nel Veneto, 1), 1–74; \textit{N.G. Siraisi, Arts and Sciences at Padua: the Studium of Padua before 1350}, Toronto 1973 (Studies and texts, 25); E. Paschetto, \textit{Pietro d’Abano: medico e filosofo}, Firenze 1984; and L. Olivieri, \textit{Pietro d’Abano e il pensiero neolatino: filosofia, scienza e ricerca dell’Aristotele greco tra i secoli XIII e XIV}, Padova 1988 (Saggi e testi, 23).} After this general introduction, Leoniceno reconstructs Galen’s view. Then he examines Aristotle’s opinion by criticising Peter’s interpretation of it. After that, he provides his own inter-
pretation. He closes the treatise by refuting Averroes. In the following four sections, I will adhere to this sequence.

Leoniceno starts his examination with Galen’s view expounded in the treatise On the Formation of the Foetus, which was all but unknown to the medieval scholastics. Leoniceno was the first to use this treatise in the context of Renaissance humanism. Here he quotes at length the words of Galen, who confesses to be ignorant of the formative cause of the foetus. Indeed this passage is taken from the concluding part of On the Formation of the Foetus, which is highly important in understanding Galen’s own philosophy. Let us summarise Galen’s argument. Recognising the presence of supreme intelligence or force in foetal formation, Galen asks if the soul residing in the seed is responsible for this formation. According to him, the Aristotelians call this soul ‘vegetative’ and the Platonists ‘appetitive’, while the Stoics do not call it ‘soul’ at all but ‘nature’. Galen himself thinks that the seed’s inner soul is devoid of intelligence and totally ‘irrational’ (ἄλογος). Although his Platonic master taught him to identify the formative cause of the foetus as the World-Soul, he considers it almost blasphemous to imagine that dreadful beasts like scorpions are formed by the soul of the universe. All that he can accept for certain is the presence of supreme intelligence in foetal formation.

The quoted passage of Galen suggests that he was not sure of the identity of the formative power. But Leoniceno argues that the Greek physician opted for the vegetative soul. Indeed, he knows that in On Semen, Galen presents this solution as Hippocrates’ idea. Comparing the formation of the foetus to that of plants, Galen there blames Aristotle for having explained the works of nature differently for plants and for animals. According to him, the foetus must possess above all a vegetative principle which fashions its bodily parts from the seed. Leoniceno deduces that Galen follows Hippocrates faithfully by conceiving the formative power as a ‘faculty’ (δύναµις) of the seed’s inner vegetative soul.

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Besides this solution, Galen argues in his commentary on Hippocrates’ *Aphorisms* that the animal’s natural heat forms, nourishes and augments its body.\(^{14}\) There are thus two apparently divergent ideas. Yet Leoniceno insists upon Galen’s coherence:

Nobody should think that [Galen] disagrees with himself or with Hippocrates because of the [following fact]: He attributes the formation of an animal, on the one hand, to the vegetative soul which is in the seed as [is said] in the book *On Semen* and, on the other hand, to natural heat as [is described] in the first part of *Aphorisms*. For, the idea that the soul is nothing but the body’s natural heat or constitution, which is called ‘complexion’, is also a teaching of Hippocrates.\(^{15}\)

For Leoniceno, although Galen avows to be ignorant of the soul’s substance and the formative cause of animals in *On the Formation of the Foetus*, he elsewhere presents either as Hippocrates’ view or as his own the idea that what forms the foetus is some ‘temperament’ (*temperamentum*), that is, a mixture of the four elemental qualities (hot, dry, wet and cold).\(^{16}\) As proof, Leoniceno calls upon a passage from Galen’s *On Tremor*. In this passage essential to grasping his physiological system, Galen calls ‘nature’ and ‘soul’ the natural heat of the animal. For him, this heat is not of external origin nor coming after the animal’s birth, but congenital to it.\(^{17}\) Here we observe the origin of the famous Galenic theory of ‘native heat’ (*calor nativus*) or ‘innate heat’ (*calor innatus*).\(^{18}\) So Leoniceno concludes that, if the heat given

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\(^{15}\) *VF*, ed. 1506, 2° = ed. 1532, 84: ‘Quem nemo putet ob id a seipso, aut ab Hippocrate dissentire, quod aliquando animalis formationem animae tribuit vegetali, quae in semine existit, veluti in libro *De semine*: aliquando calori naturali, ut in prima particula *Aphorismorum*. Nam hoc quoque Hippocratis est dogma, eandem rem esse animam et calorem naturalem, sive corporis temperamentum quam complexionem vacant.’


to the seed at the beginning is the soul which begets the animal, Galen agrees with Hippocrates. Thus, for him, Galen’s formative power is a faculty of the vegetative soul which is, in turn, identified with innate heat or some temperament.

3. Aristotle and Peter of Abano: 
Celestial Heat, the Intellect and the Soul’s Vehicle

Next Leoniceno examines the opinion of Aristotle. He warns his readers that the Stagirite often deals with difficult questions in the manner of a cuttlefish blackening water to escape danger. Thus he proposes to seek help from the writings of Aristotle’s commentators.

First Leoniceno quotes the testimony of Galen, who reports in his On Temperaments Aristotle’s doubts on the nature of the formative power. In this passage, Galen criticises those who do not recognise as the cause of animal formation the formative power which skilfully produces bodily parts in accordance with the soul. Then Galen argues that Aristotle wonders whether this power should be attributed to a more divine principle than the elemental qualities. But he does not indicate where Aristotle expresses this doubt. Leoniceno, in his turn, locates it at the end of the Meteorology. There Aristotle attributes the cause of the formation of homogeneous parts to active elemental qualities (hot and cold), while evoking ‘nature’ or ‘another cause’ for the organization of heterogeneous parts (organs such as head and foot), made from homogeneous parts. According to Leoniceno, Galen follows this distinction by establishing two kinds of generative powers in a famous passage from On the Natural Faculties: ‘mutative’ (alterativa) and ‘formative’ (formativa). The former is the primal altering power and acts through heat, while the latter has the supreme art and acts through the order of its Creator. For Leoniceno, it is evidently concerning the second type of generative power that Galen reports Aristotle’s doubt.

20 Galen, De temperamentis, 2.6, 635–636 (and Helmreich, Galeni De temperamentis, 79). Cf. De temperamentis, 1.9, 567 (and Helmreich, Galeni De temperamentis, 36).
22 Galen, De facultatibus naturalibus, 1.6, 12 (and C. Daremberg, Œuvres anatomiques, physiologiques et médicales de Galien, 1, Paris 1854, 219–229).
23 Here Leoniceno actually follows the interpretation of Avicenna, Liber canonis, 1.1.6.2, 23. The expression ‘through the order of its Creator’ (praeccepto sui Creatoris) in the Latin
After this explanation, Leoniceno regrets that many philosophers and physicians blindly follow the Arabs in making recourse to another passage from Aristotle to explain the formative power. This is the famous enigmatic lines from *Generation of Animals*, which bear a particular cosmological dimension:

In every seed there is that which causes it to be fertile, that is, what is called ‘heat’. This heat is neither fire nor any such faculty but the pneuma which is enclosed in the seed and a foam-like body. Nature in this pneuma is analogous to the element of the stars. That is why fire does not generate any animal, and we find no animal taking shape in either fluids or solids under the influence of fire; whereas the heat of the sun and that of animals generate them. Not only [it is true of] the heat which resides in the seed, but also whatever other natural residue there may be, this also has in itself a vital principle. Considerations of this sort clearly show us that the heat contained in animals neither is fire nor draws its origin from fire.\(^{24}\)

Relying on this passage, Avicenna and Averroes explained the concept of formative power and, among their Latin followers, Peter of Abano developed his particular interpretation.\(^{25}\) Leoniceno, in his turn, remarks that, in speaking of celestial heat, Aristotle does not express the doubt described by Galen, so he makes no allusion to the formative power here. Comparing spontaneous generation caused by celestial heat with normal generation effected by the seed's internal heat, Leoniceno explains the nature of the latter:


Indeed, Aristotle does not deny that these qualities, i.e., wet and dry, contribute as passive principles to the constitution of animals, when the vivifying heat, which he affirmst to be analogous to the heat of the stars, acts in these [qualities]. Such is the [heat] contained in the seed. For, just as celestial heat acts on mud from which it begets animals, the heat of the seed also does the same thing in a matter proper to it. That is why Aristotle does not call this heat introduced into the seed ‘celestial’, as some people think, but ‘analogous’ to celestial heat.\(^{26}\)

Noticing that the seed’s heat is only ‘analogous’ to the celestial one for Aristotle, Leoniceno denies the identification Peter makes between them. According to him, heat is classified into two kinds, one of which is used by nature as its instrument for animal generation, while the other is employed by art for the perfection of its works. Following the words of Aristotle, Leoniceno allows that the first type, residing in the seed, contains a vital principle. He adds that this vivifying heat is also enclosed in sordid residues according to Aristotle. For Leoniceno, no sane man can see that which is contained in such base things as ‘celestial’ or ‘divine’. He thus accuses Averroes and Peter of concluding that Aristotle associates the formative power with a divine principle by calling it ‘divine thing’ (\textit{res divina}) or ‘intellect’ (\textit{intellectus}) and estimating it ‘separable from the body’.

From here on, Leoniceno concentrates on criticising Peter’s \textit{differentia} 48, an important chapter in the Conciliator’s embryology. To his eyes, Peter completely distorts Aristotle’s teaching. Let us summarise the passage quoted at length by Leoniceno.\(^{27}\) According to Peter, since the formative power has no instrument shaped in the seed’s mass, Aristotle regards this

\(^{26}\) \textit{VF}, ed. 1506, 3\(^{r}\) = ed. 1532, 86\(^{r}\): ‘Has enim qualitates, scilicet humiditatem et siccitatem tamquam principia passiva conferre ad constitutionem animalium, non negat Aristoteles: quum calor vivificus agit in ipsas, quem ait esse proportionalem calori stellarum, quals est qui in semine continetur. Sicuti enim calor cœlestis agens in lutum, ex eo generat animalia, ita et calor seminis in materiam sibi convenientem idem operatur. Quare hic calor semini inditus non calor cœlestis, ut quidam opinantur, sed calori cœlesti proportionalis ab Aristotele dicitur.’

power to be ‘separable’ from the body. Its ‘separability’ is, however, much weaker than that of the intellect totally separated from matter. For Peter, the formative power is divine, active and superior to any other generative power since it is simple and almost immaterial. As it cannot directly act on matter, it needs a distinct vehicle which carries it for the generation of animals. This is a subtle body, called ‘spiritus’. The formative power also needs two other instruments. One is celestial heat, always vivifying and never destructive. As it brings the beings produced by this power to some conformity with heaven, it is an extraordinary instrument. By its mediation, the formative power performs its noble actions which determine the species of beings. The other instrument is elemental heat, which can vivify and preserve natural things only with the help of celestial heat.

Although he recognises Peter’s considerable fame, Leoniceno dares to contradict him. He first criticises the Conciliator’s idea of the double instrument (celestial and elemental heats). For Leoniceno, this idea contradicts Aristotle’s teaching. Indeed, even in the medieval translation Peter uses, Aristotle does not regard celestial heat as the instrument of the formative power nor any other power commanding it. Leoniceno stresses in particular that the Stagirite places the heat rendering the seed fertile not outside the seed like celestial heat, but inside the seed. He also notices that the phrase ‘the heat contained in animals neither is fire nor draws its origin from fire’ is added so that nobody might wrongly identify it with fiery heat, which is not generative but destructive. Thus the seed’s heat is neither celestial nor fiery. That is why Aristotle estimates that the generative nature of this heat, enclosed in the seed or in its ‘spiritus’, is only ‘analogous’ to the element of the stars. What is analogous is not identical. After this clarification, Leoniceno proceeds to explain how to understand the seed’s heat correctly. For him, there exists a third kind of heat which, though resulting from elemental fire, is proper to beget living beings and, for this reason, is considered to be analogous to celestial heat. He also warns his readers to avoid regarding celestial heat as the cause of animal generation by wrongly following the famous axiom from Aristotle’s *Physics*: ‘Both the human being and the sun beget the human being’. What Leoniceno refuses in particular is to take external celestial heat as the seed’s internal instrument by identifying it with the formative power.

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Next Leoniceno asks whether Aristotle really calls the formative power ‘intellect’ or ‘divine thing’ and whether he considers it ‘separable from the body’. For him, the three phrases: ‘it alone comes from without’, ‘it alone is divine’ and ‘its action has nothing to do with that of the body’, suggest that Aristotle has only the ‘intellect’ (mens or intellectus) in mind. If these phrases concern the intellect alone, how can they all apply to the formative power at the same time? Judging the new translation by Theodore of Gaza (1400–1476) clearer and more accurate, Leoniceno argues that these phrases have nothing to do with the formative power, but only with the intellect. To reinforce this interpretation, he adds another crucial passage of Aristotle, which also speaks of the intellect:

The body of the sperm [is that] which encloses the seed of a soul-principle, partly separable from the body (in those beings which contain a divine part, such as that which is called ‘intellect’), partly inseparable ...

If all four statements concerned the formative power as Peter expected, features such as identity with the intellect, separability, divinity, external origin and immanence to the seed, would also be attributed to this power. However, for Leoniceno, this is totally false and, he argues, Peter himself would have noticed it. But due to the obscurity of the medieval ‘barbaric’ translation of Aristotle’s text, Peter ended up, says Leoniceno,

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inventing a surprising term that Aristotle would never have dreamed of.
For, Peter not only identified the formative power as the intellect, but also
named it ‘evoked intellect’ (*intellectus vocatus*) besides the passive and
active intellects. Where precisely in Aristotle’s text, Leoniceno ironically
wonders, could Peter find the term ‘vocatus’ designating the intellect’s prop-
erty like ‘passive’ and ‘active’? To Leoniceno, it is absurd. He concludes
that Theodore’s version, which adopts the phrase ‘a divine part *such as* that
which is called “intellect” is included’ (*divina pars comprehenditur, qualis est quae mens appellatur*), totally demolishes Peter’s erroneous identifica-
tion because it suggests only the analogy with the intellect.

Then Leoniceno turns to the first part of Peter’s argument which asserts
that the formative power is separable because it has no ‘shaped’ (*figuratum*)
instrument in the seed. For Leoniceno, if this power is estimated ‘separa-
tive from the body’, it is not because it has no literal shaped instrument, but
because it does not have any corporeal instrument or, to follow Aristotle’s
words, because its action has nothing to do with that of the body. Such an
action comes only from the intellect’s power. No other powers of the soul
can act without the body since they are inseparable from it and their actions
are bodily. As proof, Leoniceno relies on Themistius’s (ca. 317–ca. 388) para-
phrase of Aristotle’s *De anima*. Themistius argues there that the soul cannot
exist separately since its actions always require the body, whether it is cor-
poral or something more intimate and hidden such as Plato imagined.

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32 *VF*, ed. 1506, 3r = ed. 1532, 87r: ‘Ait enim vitutem formativam, non mentem vel intel-
lectum simpliciter ab Aristotele nominari, sed intellectum vocatum ad differentiam intel-
lectus potentialis et agentis. Sed velim scire a Conciliatore aut Conciliatoris sectatoribus,
ubi unquam legerint apud Aristotelem, vocatum esse intellectus proprietatem sicuti poten-
tionale et agens. Nonne hoc quoddam est nugamentum, si ita dicatur, quod virtus forma-
tiva ab Aristotele intellectus vocatus vocetur.’ Cf. Peter of Abano, *Conciliator*, di-
ff. 48, 71rG: ‘Nominavit autem eam Aristoteles intellectum vocatum ad differentiam intellectus poten-
tialis et agentis pars existentium animae intellectivae’.

33 Themistius, *Paraphrasis in libros Aristotelis De anima*, I, ed. R. Heinze, *Themistii in li-
bos Aristotelis De anima paraphrasis*, Berlin 1899 (Commentaria in Aristotelem Graeca,
5/3), 6 (cf. the Latin translation by E. Barbaro: Themistius, *Libri paraphraseos*, Venezia 1499,
repr. Frankfurt am Main 1978 [Commentaria in Aristotelem Graeca, Versiones Latinae, 18],
1996 [The ancient commentators on Aristotle], 20). The phrase ‘such as Plato imagined’
seems to be an interpolation of Ermolao Barbaro (1454–1493). His Latin translation appeared
in Treviso in 1481, then several times in Venice. Cf. V. Branca, ‘Ermolao Barbaro and Late
*Catalogus translationum et commentariorum: Medieval and Renaissance Latin Translations
Leoniceno adds that the formative power cannot be separable from the body because, according to Peter, it needs a subtle body as its instrument. The divinity of the formative power is also rejected on the same grounds. For Leoniceno, by the ‘divine thing’ Aristotle means only the intellect’s power which cannot come from within the seed but from without. As a conclusion, Leoniceno denies the identification of the intellect’s power with the formative one. For him, the intellect stands so far away from the body that it cannot even use a body of the least degree of corporeity like ‘spiritus’.

Leoniceno closes his refutation of Peter in this way. To clarify further the passages in question from Generation of Animals, he makes use of two other texts, one of which is the only existing Greek commentary on the same treatise. It was once attributed to John Philoponus (ca. 490–ca. 570), but its real author was Michael of Ephesus (fl. ca. 1138) who wrote it to fill a lacuna in the Greek commentaries on Aristotle’s works. To show that the fourth passage (De generatione animalium, 737a7–12) mentioned above concerns the intellect alone, Leoniceno quotes Michael’s commentary which, according to him, renders the passage more harmonious by adding a Latin relative pronoun ‘cujus’:

But the body of the sperm [is that] which encloses the seed of a soul-principle. One [part] of the soul is separated just like that intellect coming from without, while the other, that is, its irrational part, is inseparable.

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34 VF, ed. 1506, 3r = ed. 1532, 87*: ‘Ex his satis arbitror esse ostendum non posse virtutem formativam, quae ut etiam concludit Conciliator, habet corpus subtile pro instrumento, aliquo modo separabilem nominari secundum Aristotelis opinionem. Quod autem neque res divina ab ipso vocetur, illa ratione probatur, quia cum corpore adventit, semine scilicet, quod est excrementum alimenti. Absurdum autem videtur ut aliqui excremento res quaepiam divina tribuat natura. Et ob similem rationem negavit Aristoteles virtutem intellectualem, quae res divina sit, cum semine provenire, quod sit excrementum alimenti, unde eam extrinsecus accedere pronunciavit.’


For Leoniceno, this interpretation clearly shows that here Aristotle speaks of the division of the soul into two parts (intellectual and irrational) without alluding to the formative power.

The second text Leoniceno calls upon is *In calumniatorem Platonis* (1469) by Cardinal Bessarion (1403/1408–1472).37 There Bessarion explains the meaning of the enigmatic passages from *Generation of Animals* to prove the agreement of Aristotle and Plato as to the union between soul and body. This union is realised by some intermediate body of excellent nature, described by the Platonists as the soul’s ‘vehicle’ (ὄχηµα), resulting from the luminous and ethereal body of heaven.38 Leoniceno informs his readers that the idea of the soul’s vehicle was ridiculed by a false accuser of Plato, George of Trebizond (1395–1472/1473).39 For Bessarion, who argues against George, Aristotle teaches the following points:

1. A medium is required for the union of two extremities (soul and body);
2. This medium is a body which is distinct and separate from matter and more divine than the four elements;
3. Its nature varies according to the nobility of each soul.

According to Bessarion, Aristotle identifies this vehicle with the seed’s inner ‘spiritus’, estimating its nature analogous to the celestial element. This vehicle is partly separated from the seed and partly bound to it. Its inseparable part is a thick material liquid which spreads throughout the seed. Thus Bessarion concludes that there is no reason to mock Plato for believing that in generation the soul comes from within such an intermediate vehicle. Leoniceno, in his turn, evaluates the cardinal’s interpretation as follows:


39 George of Trebizond, *Comparationes physiophororum Aristotelis et Platonis*, Venezia 1523, repr. Frankfurt am Main 1965, sig. [iv–vi]. This work first appeared in 1458. On George, see Monfasani, *George of Trebizond*. 
But this explanation of Aristotle’s words differs from the first one quoted from Michael of Ephesus only on the [following point]: the latter attributes separable and inseparable differences to the soul’s parts, that is, the intellectual one and the irrational one; the former [attributes them] to the body which is the soul’s vehicle. Aristotle says that it is ‘separable’ ‘in those beings which contain a divine part’, as if the other [part], that is, the irrational and appetitive one, had a thicker vehicle and substrate, and [were] inseparable from this corruptible body.  

Facing this Neoplatonic theory of the soul’s vehicle, Leoniceno does not forget to mention a crucial passage which Themistius formulates in his paraphrase of De anima, aiming to show Aristotle’s agreement with Plato. According to Themistius, these two men remove from the soul all that is material while assigning to it a certain divine and celestial body which produces the soul and the intellect. Themistius clearly connects the Neoplatonic theory to Aristotle’s idea of the ethereal nature of the seed’s inner ‘pneuma’ (spiritus). Using this connection, Leoniceno interprets:

Indeed [Themistius] shows that this rarefied and splendid vehicle [is] for Plato nothing but a genius from which the thinking soul results. For Aristotle too, there is some nature attributed to the soul, which corresponds by analogy to the fifth body and which he estimates to belong to the souls of all living beings. Thus, those who are familiar with both the Aristotelian school and the Platonic one see that, in this passage of the second book of Generation of Animals … Aristotle does not speak of the formative power but of the soul’s vehicle which is partly separable and partly inseparable.

This development is particularly interesting not only for the understanding of Leoniceno’s idea, but also for the interpretation of Themistius’s philosophy itself because some specialists do not acknowledge the impact of

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40 VF, ed. 1506, 4r = ed. 1532, 88r: ‘Non differt autem haec expositio verborum Aristotelis a prima Michaelis Ephesii recitata, nisi in eo quod separabiles atque insepurables differentias altera partibus animae tribuit, scilicet intellectuali et irrationali, altera corpori quod est vehiculum animae, quod Aristoteles esse separabile dicit, in quibus pars divina comprehenditur, quasi altera, scilicet irrationalis et appetitiva vehiculum habeat, atque subjectum crassius, et a corpore hoc corruptibili inseparabile.’

41 Themistius, In De anima, I-3, ed. Heinze, 19 (cf. transl. Barbaro, 72r and Todd, 35). Cf. Plato, Timaeus, 41E, 44E, 69C. Here also the Latin translation of Barbaro deviates from the Greek original.

42 VF, ed. 1506, 4r = ed. 1532, 88r: ‘Nam apud Platonem vehiculum illud rarum ac splendidum nihil aliud, quam ingenium e quo animus constet, ostendit. Apud Aristotelem quoque naturam quandam animae tributam invenias quae quinto corpori proportione respondeat, quam ad omnium animalium animas pertinere censuit. Videtur ergo Aristoteles secundum istos viros, non minus Aristotelicae quam etiam Platonicae sectae familiares, loco illo libri secundum De generatione animalium … non de virtute loqui formativa, sed de vehiculo animae, quod partim sit separabile, et partim inseparabile.’
Neoplatonism on this Greek commentator. In any event, the corresponding passage of Themistius offers Leoniceno a beautiful pretext to develop the Neoplatonic reading of Generation of Animals. It should be noted that in On the Doctrines of Hippocrates and Plato, Galen also associates the soul’s vehicle with Aristotle’s fifth body. But Leoniceno, who certainly knows this treatise well, does not mention it. He simply wonders whether the luminous and ethereal vehicle of this kind, which is intimately connected to the birth of the rational soul according to Themistius, can actually be contained in the seed. Leoniceno does not go further but only suggests leaving this issue to those who study both Plato and Aristotle. Judging it sufficient to point out the elements that help clarify the difficult passages of Generation of Animals, he concludes that these passages do not concern the formative power, contrary to what Peter of Abano sought to establish.

4. Alexander of Aphrodisias and Simplicius: The Seed’s Inner Nature

Having demolished Peter’s interpretation, Leoniceno tries to reconstruct the notion of the formative power from an Aristotelian perspective. He starts with a passage from the beginning of the sixth and last chapter of On the Formation of the Foetus, where Galen speaks of some ‘nature’ residing in the seed. According to Galen, philosophers concur that foetal formation is organised by what they call ‘nature’ although its substance is unknown. Galen acknowledges the supreme intelligence of a craftsman in the generation of living beings, and exhorts these philosophers to disclose

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45 Galen, De foetu trium formatione, 6, 687–689 (and Nickel, Galen, 90–94).
the real identity of this craftsman. At the same time, he knows that they refuse to attribute this kind of supreme intelligence to the seed’s inner nature. As he also rejects Epicurus’s idea that all is made without providence, there remain only two options, according to Galen, so that foetal formation can attain the best goal: 1) by a movement devoid of reason and art; 2) by a mechanism analogous to that of automatic puppets or marionettes. Galen judges that only the second option is worth examining in detail.

On the basis of this argument, Leoniceno places the ‘nature’ (natura) contained in the seed at the heart of his discussions. Speaking of the seed’s inner ‘irrational nature’, Galen is in reality making an allusion to a Stoic theory. However, according to Leoniceno, Aristotle and Alexander of Aphrodisias (fl. ca. 200) are designated here by the name of ‘philosophers’. To his eyes, Galen thinks that these men attribute the cause of animal generation to an irrational power, called ‘nature’, and compare its movements to those of marionettes.

It should be noted that, for Aristotle, the father introduces into seeds a force that moves matter, i.e., the menstrual blood furnished by the mother. The first movement puts into action the second one, the second movement the third one, and so forth until the end of the generation of a complete animal. It is precisely in this explanation that Aristotle adopts the model of marionettes. According to Leoniceno, Galen builds his argument on this very development although Alexander deems the seed’s inner nature to be an irrational power. Unfortunately, it is not possible to study the latter’s view firsthand because his commentaries on Aristotle’s Generation of Animals and Physics are lost. Leoniceno thus relies upon Simplicius’s (fl. 529—?) commentary on Aristotle’s Physics, which contains some fragments of Alexander’s lost commentary, especially on the theory of natural generation.

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48 Aristotle, De generatione animalium, II.1, 734b10.
49 On Simplicius, see I. Hadot, Le problème du néoplatonisme alexandrin: Hiérocles et Sim-
Leoniceno first quotes an extract attributed to Alexander.\textsuperscript{50} It explains that a goal and a model are not found in the same manner in all beings. For those produced through choice, art or reason, the goal of their production is preconceived in the mind of their agent and is furnished as a model. This is not the case for beings produced by nature, which does not work through choice or reason. That is why Alexander qualifies it as an irrational power while conceiving it as a determined principle inserted into matter. This power makes a product which, in its turn, becomes the agent of what follows, and so forth until a definite end. Exactly like Aristotle and Galen, Alexander then introduces the example of marionettes. That is the principal reason why Leoniceno believes Galen’s criticism to be directed towards Alexander. In any event, the latter thinks that the movement of marionettes is not caused by reason or choice given to their pieces. For him, the same logic applies to the seed’s inner nature.

Directly after citing Alexander’s opinion, Leoniceno provides Simplicius’s answer.\textsuperscript{51} Simplicius asks, if generation occurs in the manner described by Alexander, how imperfect things can produce perfect things; for example, a whole tree from its seed. According to Simplicius, two rules apply here: 1) a general cause must precede particular causes; 2) what is in potentiality is brought into actuality by another cause which is also in actuality. Then he adds that the ‘reason-principle’ or rational principle (logos) of a child is preconceived in the parents, and thanks to it, the child is generated. The father initiates the first movements through his seed in the fashion


of marionettes. Following this argument, Leoniceno draws a passage from Simplicius who rectifies Alexander’s view:

But why does [Aristotle according to Alexander] say that nature is an irrational power although it acts for the sake of some end, and proceeds in an ordered way according to stages and determined measures? The answer is that the productive reason-principle is twofold, one producing in a cognisant manner (which the interpreter [Alexander] sees as reason alone), the other without cognition and self-contemplation, but still producing in an ordered and determined manner for the sake of some prior goal. Just as the non-cognisant [one] is irrational in contrast to cognisant reason, anything that produces in a random and disorderly manner is irrational, unlike that which produces in an ordered and determined manner for the sake of something.\footnote{Simplicius, \textit{In Physicam}, II.3, 313 (cf. transl. Fleet, 70–71).}

Simplicius distinguishes two kinds of reason-principle. The first one produces with cognition or knowledge of its product. Only for this type, Alexander accepts the title of ‘reason’. It is, so to speak, the cognisant rational principle. The second one, by contrast, produces without cognition, but in an orderly and determined way. The agent that does not have any cognition of products, even if it produces them in an orderly manner for the sake of some end, is called ‘irrational’ by Alexander. For both Alexander and Simplicius, the second way applies to the generation of living beings since nature makes its product like itself, not by choosing but by being, just as a signet-ring makes its impression. However, Simplicius rejects Alexander’s refusal of the title of ‘reason’ to nature. That is why he insists that Aristotle qualifies nature as a ‘rational principle’ in \textit{On Generation and Corruption}\.\footnote{Aristotle, \textit{De generatione et corruptione}, II.6, 333b11.} But how can an agent devoid of cognition achieve a determined order and a definite end in the act of production? Simplicius answers that natural things exist in a way that allows them to preserve order and consistency simply by being without cognition and to reach a definite end like the movement of marionettes. If natural things are not produced by chance, it is sensible to think that they draw their existence from themselves or from another cause. Here comes the conclusion of Simplicius, which Leoniceno presents to his readers:

Therefore it is reasonable to say rather that nature is a ‘concause’ and that the immediate causes of things that are generated and corrupted are the movements of celestial bodies according to which beings on this earth are modified, while higher up are the reason-principles of these movements,
placed in the soul [of the world], and even higher than these [causes] are the intellectual forms from which in the first instance the formal light is produced in all things according to the suitability of the recipients.\(^5\)

Instead of calling nature ‘reason-principle’, Simplicius prefers to give it the name of ‘co-responsible’ (συναιτίος) which is rendered as ‘concause’ (concausa) in Leoniceno’s Latin translation. Simplicius conceives it as an auxiliary to celestial and intellectual causes. This passage is remarkable because it shows a particularly Neoplatonic dimension of Simplicius’s philosophy. What is more pertinent to the present study is the fact that Leoniceno places it at the heart of his philosophical reflections on the formative power. He argues that Simplicius, like Galen, finds it absurd to attribute the cause of animal generation to the seed’s inner nature alone which is for Alexander an irrational power. For Leoniceno, Simplicius prefers to call it ‘concause’ or ‘instrumental cause’ by positing at the same time the intervention of higher and more powerful causes (soul, intellect and intellectual forms or Ideas). However, it should be stressed here that Leoniceno’s aim remains the same: to refute those who believe that Aristotle identifies the formative power with the intellect. Indeed, in the Physics the Stagirite himself carefully distinguishes things produced by nature from those made by the intellect. Thus Leoniceno says:

However, dealing with natural generation in the natural realm, Aristotle makes no mention of [a separated agent]. But rather, wishing to avoid any cause separated [from the body] in the second book of the Physics, for fear of mixing up the theological and physical doctrine, he denied that nature acts by will and reason, and spoke of it as an irrational power. Alexander also followed this meaning of the words in his interpretation, while Simplicius wished to bring Aristotle into the closest possible accordance with Plato. To avoid the idea that the works of nature are made without any cognition or by chance, he gave them as causes not only nature and heaven but also the soul and the intellectual forms. It is in this way that he addressed Galen’s doubt.\(^5\)


\(^5\) VF, ed. 1506, 5r = ed. 1532, 90v: ‘De quo tamen Aristoteles generationem naturalem naturaliter tractans, nullam facit mentionem: quin potius secundo libro De naturali auscultatione nolens causam separatam attingere, ne doctrinam theologicam cum physica confundideret, naturam negavit consilio agere ac ratione, et de ea tamquam de potentia irrationali locutus est. Quem verborum sensum etiam in sua expositione secutus est Alexander. Simplicius vero, qui quantum potuit Platonis Aristotelem studuit facere consentientem, ne natucae opera sine cognitione aliqua et veluti casu facta viderentur, illis non modo naturam ac coelum, sed praeterea animam et formas intellectuales pro causis arrogavit, atque ita Galeni dubitationi satisfecit.’
Leoniceno goes further to argue that nature remains the cause of animal generation although it is called ‘concause’ by Simplicius. For him, even though diverse names such as ‘soul’, ‘psychic power’ and ‘irrational natural power’ are accorded to it, what brings one less perfect thing into a more perfect state is the cause of generation. He also claims that ‘the efficient cause in the generation of natural things’ is the best definition of nature for Simplicius.\(^\text{56}\) But nature conceived in this way, stresses Leoniceno, differs from the soul since the latter is the active principle of the bodies’ movement, while the former is the passive one. Indeed Simplicius himself clearly distinguishes nature from the soul. As a conclusion, Leoniceno quotes the following words by Simplicius:

But since bodies are far removed from indivisible and incorporeal nature as well as from the life that subsists in absolute being, and are lifeless and do not breathe at all in themselves, too chilled for any kind of life, they have within themselves the last sort of life, which relates that which we call ‘nature’ to power and aptitude. Because of it, even lifeless things can be moved and changed, and it is even said that they are born and act passively on each other.\(^\text{57}\)

Relying on this passage of a particularly Neoplatonic flavour, Leoniceno argues that the seed’s inner nature is the principle of movements for animal generation. This nature is neither the soul itself nor any power coming from it, but a natural productive power. Being different from the soul and inferior to it, the nature given to matter as its first principle is a power that helps the introduction of the soul into matter for living beings. To Leoniceno, this is the definition of Aristotle’s formative power, which emerges through Simplicius’s interpretation.

5. Averroes and Themistius: Ideas, the Intellect and the Soul

Leoniceno turns to the refutation of Averroes’s argument expounded in his *Long Commentary* on Aristotle’s *Metaphysics*. The passage quoted by Leoniceno aims to explain the famous axiom of the Stagirite: ‘The human being is begotten by the human being’.\(^\text{58}\) Let us first give the main line

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of Averroes’s argument. According to the Commentator, in the case of beings reproduced through the seed, the father introduces his form into the seed which produces the offspring’s form. In the case of beings that are born spontaneously without the seed, celestial bodies provide them something that plays the role of the seed and powers residing in it. For Averroes, these powers are divine and generate mutually similar beings, just as arts produce their products. These powers are compared to the intellect since they perform intellectual actions which do not need any corporeal instrument. Averroes adds that these generative powers, called ‘formative’ by physicians, differ from the other natural powers of animal bodies, which act only through definite instruments. Quoting the famous words of Galen: ‘I do not know whether this power is the Creator or not’, Averroes makes it clear that this power, acting with the help of the seed’s heat, lies in the seed as a form. He compares this form not to the soul in the innate heat of animals but to the soul in celestial bodies. That is why, he concludes, Aristotle celebrates the formative power by placing it among the divine principles.

Leoniceno is surprised to see Averroes also attribute this kind of intellectual feature to the formative power under the authority of Alexander. As we have seen, for Leoniceno, Alexander conceives the seed’s inner nature as an irrational power. It is thus impossible to identify this power with the intellect in the name of Alexander. Moreover, adds Leoniceno, if Galen compares the formative power to the Creator, it is not because this power acts without any instrument, but because it performs its actions with a skilfulness that seems to transcend all natural forces. Thus Leoniceno reproaches Averroes for reconciling Galen with Aristotle and Alexander on this erroneous basis. For him, Galen stands apart from these men who consider the seed’s inner nature an irrational power, and Averroes misunderstands Alexander’s position by wrongly using his words as though Alexander holds the same view as Galen.


Leoniceno also criticizes Averroes on another point. According to him, the Commentator erroneously deduces the agreement of Themistius and Avicenna from the famous theory of the ‘Giver of Forms’ (*dator formarum*).\(^{63}\) To show Averroes’s error, Leoniceno turns to Themistius’s paraphrase of Aristotle’s *De anima*.\(^{62}\) For him, Themistius’s theory does not demand the existence of a higher agent separated from the body like the Giver of Forms:

In reality, Themistius clearly introduces the idea that not a separated agent but the soul forms for itself a body which it then enters. Thus, he seems to have estimated that the father’s seed, which builds and fabricates [its body], is animate according to Aristotle since the [seed’s] soul is that which fashions a house for itself from the matter furnished by the mother. Indeed, it is neither the father’s soul (otherwise it would migrate from one body to another) nor, for the same reason, another separated soul which, according to Themistius, must procreate, form and animate those which are born from a putrefied nature.\(^{63}\)

Leoniceno argues that, although Themistius supposes a separated agent for the spontaneous generation of inferior living beings from putrefied matter, he does not posit such an agent for those beings that are reproduced through the seed. According to Themistius, the soul residing in the seed is sufficient to form matter. But Leoniceno warns his readers that this seed’s inner soul

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\(^{63}\) *VF*, ed. 1506, 5’ = ed. 1532, 91’: ‘Themistius vero non agens separatum, sed animam ipsam formare sibi corpus quod subit, liquido insinuat. Unde videtur sensisse semen maris, quod architectur et fabricat secundum Aristotelems esse animatum, quando ejus anima est illa quae ex materia, quam femina praebet, suum sibi facit domicilium. Neque enim est anima patris generantis, aliquin migraret a corpore in corpus, neque ob eandem rationem anima abstracta, quam secundum Themistium oportet his quae ex putrida natura generantur, dare creationem, lineationem, et animam.’
remains in potentiality like a geomter at rest. He thus concludes that Themistius does not assign the formative power to the soul separated from the body as Averroes believes in error, but to the father's seed animated in potentiality. This probably means that Themistius identifies the formative power with the soul in potentiality residing in the seed.

From here on, Leoniceno exhorts his readers to gather the views of Aristotle's ancient commentators on the formative power, whether it is a natural (irrational or concausal) power, as in Alexander and Simplicius, or the seed's inner soul, as in Themistius. It should be noted that Averroes reports the opinions of some Arabic writers in his *Long Commentary* on Aristotle's *Metaphysics*. Among them, Leoniceno especially criticises the view that Averroes advances as his own and Aristotle's because he finds it profoundly contaminated with Platonic teachings:

Indeed, [Averroes] writes many things, expounded, he says, in the books of [Aristotle's] *On Animals*, about the heat of the sun and the stars as well as about the heats which, resulting from these celestial heats, generate the species of animals. Then he argues that these heats have the proper capacity [coming] from the divine intellectual art which is similar to the single form of the single and commanding art to which various arts are subordinated. Therefore it should be understood, he says, that nature produces something perfectly and regularly without itself being intelligent as if it were inspired by active and nobler powers, called 'intelligences'. Then he adds: 'These proportions and powers, which are produced in the elements by the motions of the sun and of the other stars, are what Plato calls “the [superior] forms”...’ This is what Averroes says. Being himself Platonising, as I have said, he condemns Plato.

Leoniceno clearly remarks the self-contradiction of Averroes who, at the same time, is inspired by Platonic theories and condemns them. But is the appeal to Platonism itself rejected? Leoniceno says that if 'nature' means

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64 Cf. Aristotle, *De generatione animalium*, II.1, 735a10–11.
the universal nature of all natural things, it must first receive the reason-principles of all these beings before it begets them and makes them similar to the principles contained in it. He understands that these reason-principles are well and truly Plato’s Ideas, although Averroes pretends to prefer Aristotle’s view. However, for Leoniceno, the difference between these two views is slight, and it is again Simplicius who proposes the best solution:

These two opinions, however, will not seem very different if besides heaven and nature those superior causes, that is, the supreme intellect and the intellectual forms, are also taken into account. Against Alexander, Simplicius also resolves in a Platonic and Aristotelian manner the doubt concerning natural generation and nature as an irrational power.

Leoniceno adds that, for Themistius, spontaneous generation is brought about by the World-Soul which is carried by universal nature, and that Averroes too accepts this idea since it does not disagree with Aristotle’s theory in Generation of Animals: ‘There is water in earth, and pneuma in water, and in all pneuma is soul-heat, so that in a sense all things are full of soul’. Thus, Leoniceno does not reject the appeal to Platonism itself. What he does not accept is the identification of the formative power with the intellect.

66 VF, ed. 1506, 6’ = ed. 1532, 92’: ‘Quae tamen duae opiniones non multum videbuntur discrepare, si praeter coelum atque naturam causae etiam illae superiores, mens scilicet eximia et formae intellectuales, adhibeantur: Quando et Simplicius tactam contra Alexandrum de generatione naturali, et natura, potentia irrationali dubitationem, non magis Platonice, quam etiam Aristotelice solvit.’

Lastly Leoniceno finds an important repercussion of Averroes’s interpretation in Gentile da Foligno (?–1348), the emblematic commentator of Avicenna’s *Canon*. Indeed, following Averroes faithfully, Gentile demands to posit in natural beings something that acts through its intellect to introduce forms into matter. Leoniceno quotes Gentile’s words:

> But there seems to be in art some agent which limits, treats and prepares matter through its intellect, as is evident, for example, in the craftsman’s art ... There will be also in nature some agent which limits, treats and prepares matter through its intellect. The whole heaven, composed of all [celestial bodies], executes this [production] as an instrument through its movement and light, principally through its intellectual [powers] which lie in it and in which the [productive] art has been received internally. This productive art belongs to every inferior form or any existence here below. Whence Averroes said in the twelfth book of the *Metaphysics* that nature acts only when it is inspired by superior and more divine causes.

Leoniceno criticises Gentile’s argument that all the disciples of Aristotle agree with each other. But, as we have seen, Alexander has a different view. Leoniceno thus concludes that, instead of attributing to Aristotle ideas which actually come from Plato, Simplicius gave more rightly what the Stagirite should have said in accordance with Plato and the truth!

### 6. Conclusion

I have analysed the major line of Leoniceno’s discussions on the formative power and have shown their principal sources. He criticised medieval authors such as Averroes and Peter of Abano, relying on newer humanist translations (including his own) of Aristotle and of the ancient Greek commentators, especially Alexander, Themistius and Simplicius. He also

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employed some texts hitherto unknown and non-translated into Latin such as those of Galen and Michael of Ephesus. Leoniceno’s use of these ancient Greek commentators is worth stressing since he was one of the first Renaissance humanists to make use of them in medical and scientific debates. He furnished to Western readers some important elements of reflection, previously unknown to the Arabo-Latin tradition of embryology. It can thus be said that his On Formative Power stands at the crossroad of the medieval tradition and the new humanist trend unique to the Renaissance. What animated Leoniceno’s mind were a strong anti-Arabism and a steadfast love for the Greek sources. This twofold motivation is expressed through his philological meticulousness.70

On the true identity of the formative power, Leoniceno simply remained an interpreter of each author. Instead of building his own synthesis, he preferred to explain as a philologist the correct meaning of terms and phrases, and the contradictions and coherences proper to the argumentation of each writer or of his commentator. My analysis, however, has shown that he favoured Simplicius’s Neoplatonic interpretation. What Leoniceno refused constantly was the identification of the formative power with the intellect. This identification, which he thought false, was frequently introduced due to confusion based on the analogy between artificial production and natural generation, as is seen in Averroes, Peter and Gentile.71 The present analysis has also witnessed how conscious Leoniceno was of Neoplatonic elements in the writings of the ancient Greek commentators such as Simplicius and Themistius. In this regard, his knowledge of Platonic doctrines in Bessarion is noteworthy. His argument related to the soul’s vehicle, a theme venerated by Florentine Platonists such as Marsilio Ficino (1433–1499), has revealed his familiarity with the ongoing debates of his humanist contemporaries.

Although the primary motif of Leoniceno’s treatise was embryology, his discussions also covered important philosophical issues on the soul and the intellect. They coincided with the development of a new Aristotelian study of soul and intellect among his contemporaries at Padua such as Agostino Nifo (1473–ca. 1538) and Pietro Pomponazzi (1462–1525), who also


71 This confusion can be traced back to Aristotle himself, see Takahashi, ‘Nature, Formative Power and Intellect’, 474–475.
amply used the writings of the ancient Greek commentators of Aristotle. It is thus reasonable to ask if there were eventual exchanges of ideas between them and Leoniceno. This issue would not be without merit for a better comprehension of some crucial aspects of Renaissance Aristotelianism.

Psychology and the Other Disciplines

A Case of Cross-Disciplinary Interaction (1250–1750)

Edited by
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