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# The Nature of Cartesian Logic

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*I argue that Descartes and the Cartesians are likely in agreement that logic is an ars cogitandi (that is, an art of thinking well) whose aim is to perfect the ingenium (or wit) by the exercise of its operations: ideating, judging, discoursing, and ordering. We can see that these elements are the underpinning of both the Regulae and the Discourse on Method, and thus, like Adrien Baillet and others in the seventeenth century, we can understand these two works as embodying Descartes' "logic," despite Descartes' notorious anti-logic Renaissance rhetoric in both writings.*

The nature of logic in the early modern period, and in particular that of Descartes' logic, is an issue that interests me, although, when thinking about the reception of Descartes' philosophy, I previously bracketed away the question of whether Descartes' *Regulae* could be considered to be a logic and, if so, what kind of logic it might have been. The manuscript of the *Regulae* was not readily available in the seventeenth century, having been published in Dutch only in 1684 and Latin only in 1701, so any question about that work would be marginal with respect to its influence on seventeenth-century Cartesians. But questions about Descartes' intent—here about whether and how the *Regulae* or *Discourse on Method*, part 2, might have been considered by him to be logics—would be different than questions about its influence. Given the complexity of these issues, I find compelling what Adrien Baillet says about them in his biography of Descartes (Baillet 1691, 1: 280–86). Baillet had a manuscript copy of the *Regulae* in his hands when considering the issue. As he indicated, several people thought that Descartes' method in the *Discourse*—that is, the rules he prescribes for the conduct of the mind—constituted Descartes' logic.<sup>1</sup> Others thought

1. “Plusieurs ont considéré ce discours de la Methode de M. Descartes comme la Logique de sa Philosophie; et il est difficile de n'estre pas de leur sentiment, lors qu'on considere que la fin de la logique n'est autre chose que de former le jugement, et de prescrire des regles à l'esprit pour se conduire” (Baillet 1691, 1: 281).

that Descartes' real logic was his *Geometry*, because they considered it to be the key to all the liberal arts and all the sciences.<sup>2</sup> Yet others believed Descartes' true logic was the *Meditations*, because there, after stripping away all beliefs acquired by "education, custom, and authority," he established "thinking" as the principle on which he wanted to base his whole philosophy. Baillet refers to Pierre Gassendi for this latter view, citing his Chapter 9, "The Logic of Descartes," from Book I of *Syntagma* I on the Origin and Variety of Logic (which also contains chapters on the Logic of the ancients, plus Lull, Ramus, and Bacon). Gassendi says there that the *Meditations* contains Descartes' logic because of the principle Descartes posits in the work, namely, "everything I clearly and distinctly perceive is true." For Gassendi, given that the mind can err when thinking, to keep itself from doing so, it provides for itself the art of logic whereby it can direct its own operations and attain truth by making them immune from error. According to Gassendi, Descartes "believed that there were enough resources in the intellect that it could come to have perfect knowledge of all things, even of the most abstruse ones, that is, not only of bodies but even of God and the soul, by its own power."<sup>3</sup> Gassendi's view about Descartes' logic, like the other views mentioned above, is consistent with logic as an *ars cogitandi*<sup>4</sup> or art of thinking well; however, given the diversity of opinions about what constitutes Descartes' logic, as produced by Baillet, it also seems clear that what was meant by logic in the seventeenth century was broad enough to encompass what is discussed in almost any of Descartes' works.

2. "Ils ont supposé dans cette pensée que sans le secours d'aucune autre regle ni connoissance qu'on dut avoir prise auparavant, elle peut servir seule non seulement à nous faire juger tres-heureusement de tout ce qui concerne la Philosophie, mais encore à faire une epreuve juste et certaine des inventions des autres, et à examiner ce qu'il y a de defectueux et de superflu dans ce qui a paru jusqu'ici, et ce qui reste à ajouter pour porter les sciences et les arts à leur perfection, et pour les acquérir" (Baillet 1691, 1: 281–82).

3. "ut intellectus possit vi sua in omnium rerum etiam abstrusissimarum, hoc est non modo corporum, sed Dei etiam, ac anima notitiam perfectam venire," (Gassendi 1658, 1: 65).

4. Gassendi gives us a number of different ways of referring to this art, some of them perhaps more appropriate for Descartes' logic, but, as he says, it is simpler to use the broadest term: "it is generally customary to define logic as the art of ratiocinating (*ars ratiocinandi*); insofar as it is considered as dialectic, to define it as the art of disserting (*ars disserendi*); insofar as it is considered as organic, to define it as the art of directing the actions of the mind (*ars dirigendi actiones mentis*); insofar as it is considered canonic, to define it as the art of judging of true and false (*ars veri et falsi dijudicandi*). Indeed, all these definitions, and other similar ones, amount to the same thing. To these definitions we may add this one: as is implicit in the name of logic ... it seems considerably simpler that logic be defined as the art of cogitating well (*ars bene cogitandi*)," (Gassendi 1658, 1: 65).

Baillet continued his general question on Descartes' logic by referring to the Jesuit René Rapin mentioning an unfinished Descartes logic manuscript he called "*De l'érudition*"; Baillet could not locate any such work, unless Rapin's statement was a reference to the *Regulae*, an unfinished manuscript he found problematic.<sup>5</sup> So he returned to the method of the *Discourse* as Descartes' sample of logic. He asserted that what Descartes was content to sketch has since been brought to fruition by Johann Clauberg and by the author of the *Art de penser*, that is, *the Port-Royal Logic*. (He mentioned, as well, the commentary on Descartes' *Discourse* by the Oratorian Nicolas-Joseph Poisson.) Thus, Baillet reinforced the legitimacy of thinking that there is something that could be called Descartes' logic which finds its extension in Clauberg and in the *Port-Royal Logic*; one can also add its further developments in the textbooks of Antoine Le Grand and of Pierre-Sylvain Régis.<sup>6</sup> Baillet would not have thought that "Descartes logic" would be a dissonant or self-contradictory notion.

As is well-known, Descartes was not a fan of Scholastic logic; he shared the standard Renaissance complaint about it, that basically formal logic, meaning syllogism, is useless: "they serve rather to explain to someone else the things one already knows, or even ... to speak without judgment on matters of which one is ignorant, rather than to learn them" (Descartes 1996, 6: 17; see also *Regulae*, Rule 2 and 10, Descartes 1996, 10: 365, 406). He also worried that logic in general might be harmful: "although it contains, in effect, very true and good precepts, nevertheless there are so many others, mixed up with them, which are either harmful or superfluous, that it is almost as hard to separate the one from the other as to draw a Diana or a Minerva from a block of marble" (Descartes 1996, 6: 17–18).<sup>7</sup> He compared as well the possibly harmful or superfluous effects of logic with those of the analysis of the ancients and the algebra of the moderns. He claimed that the latter two have defects as well: they both extend to extremely abstract matters which seemingly have no utility; the analysis of the ancients "cannot exercise the understanding without fatiguing the imagination;" and the

5. Vincent Carraud conjectures about there being two senses of "erudition," using the section of Baillet on Descartes' Logic, the Letters to Elisabeth, and the *Preface* to the French edition of the *Principles*; he argues that *Traité de l'érudition* is Descartes' way of referring to the *Regulae* in French (Descartes 2013, pp. 161–72).

6. The diversity of views about what constitutes Descartes' logic is at the base of Pécharman's interesting case about the debate between Locke and Stillingfleet in the 1690s, Locke referring to the *Port-Royal Logic* and its use of ideas as Cartesian, while his adversary Stillingfleet referred as Cartesian a reliance on the rule of evidence (as Gassendi did). See Pécharman 2018.

7. In *Principles* I, art. 10, Descartes gives an example of a harmful result attending to the use of the logic of the Schools; see also *Regulae*, Rule 4 (Descartes 1996, 10: 372–73).

algebra of the moderns has been made into “a confused and obscure art that bothers the mind, instead of a science that cultivates it” (Descartes 1996, 6: 18).<sup>8</sup> All this seemed to change in the *Principles*, especially in the *Preface* accompanying the 1647 French-language edition of it. There, Descartes refers to the *Discourse* as “a Discourse on the Method for Conducting One’s Reason Well and for Seeking the Truth in the Sciences, where I summarized the principal rules of logic.”<sup>9</sup> Thus at least by 1647, Descartes came to call his method and the four rules given in the *Discourse* “the principal rules of *logic*.” This is to be explained by a passage from the same *Preface* about the tree of philosophy and the order of teaching. According to Descartes, before applying himself to true philosophy a person who has only “common and imperfect knowledge” should study *logic*, “the logic that teaches us how best to direct our reason in order to discover those truths of which we are ignorant,” but not the logic of the Schools:

properly speaking it [the logic of the Schools] is only a dialectic that teaches how to make the things we know understood by others, or even to repeat, without forming any judgment on them, many words respecting those we do not know, thus corrupting rather than increasing good sense<sup>10</sup>—but the logic that teaches us how best to direct our reason in order to discover those truths of which we are ignorant. And since this is very dependent on custom, it is good for him to practice the rules for a long time on easy and simple questions such as those of mathematics. (Descartes 1996, 9b: 13–14)

8. Here “understanding (*entendement*)” and “mind (*esprit*)” are *ingenium* in Latin (Descartes 1996, 6: 549). The coupling of the criticism of mathematics and logic occurs in the *Regulae* as well, as for example: “Indeed, I should not make much of these rules, if they were adapted only to the solution of the vain problems with which logicians and geometers are accustomed to play at their leisure; for in that case, I should think I had succeeded only in playing with trifles perhaps more subtly than others had done.” Descartes 1996, 10: 373.

9. “Un Discours touchant la Méthode pour bien conduire sa raison et chercher la vérité dans les sciences, où je mis sommairement les principales règles de la Logique” (Descartes 1996, 9b: 15).

10. We should note that Descartes talks here of dialectics corrupting rather than increasing *bons sens*. This is inconsistent with the passage from the *Discours* concerning the equality of *bons sense*. It is possible that Descartes changed his view; more likely, the passage from the *Discours* is talking about *bons sens* “properly speaking” so it is possible that here Descartes is using the term loosely; even in French, where *ingenium* is not available, he should have said ‘*l’esprit*.’”

So according to the later Descartes, the logic of the Schools is a dialectic that corrupts rather than perfects the mind, but now “dialectics” refers to a part of logic (the last part, traditionally after formal syllogism and demonstration, dealing with topics, or probable syllogisms, and sophistical refutations) and not to logic as a whole.<sup>11</sup> He does not explicitly mention the critique of the syllogism and he recommends his method as another *logic*, that is, as a good practical exercise to improve one’s mind, along with problems of mathematics, which are no longer considered harmful.

There is another Descartes passage predating these, in which Descartes calls something, possibly the rules of his method from *Discourse* Part II, “his logic.” In the *First Set of Replies* to Caterus’ *Objections* to the *Meditations*, speaking of the idea of God, Descartes says: “in this idea is contained what God is, at least insofar as he can be understood by me; and, according to the rules of the true logic, one should never ask whether something exists unless one first understands what it is” (Descartes 1996, 7: 107–8). Presumably Descartes originally said, “according to the rules of my logic,” since, referring to this passage, Descartes asked Mersenne in a 1640 letter “to put instead *according to the laws of the true logic*, in the place where I put *according to the laws of my logic*” (Descartes 1996, 3: 272–3). It is difficult to make very much sense of the passages from the *Reply* to Caterus and the letter to Mersenne: why should the true logic or Descartes’ method (as described in the four rules of method of *Discourse*, part II) forbid him to ask of something whether it exists without knowing what it is? And, according to Descartes, the four rules of method are sufficient to constitute his logic: “in place of the large number of precepts of which logic is composed, I believed that the following four rules would be sufficient for me, provided I made a firm and constant resolution not even once to fail to observe them” (Descartes 1996, 6: 18). The passages are puzzling, but at least they show that Descartes was referring to something, perhaps his method, as “his logic” at least as early as 1640. It also allows us to speculate that the seeming change, that is, his later more positive view about logic, may only be a change of rhetoric and emphasis and that, at bottom, Descartes had something like the later view from the start. However, it still leaves us with the same basic issue that, despite Descartes’ criticisms of logic, there is something he calls *his* logic. So, what is it? As the scholastics ask in their preliminary questions: Is this logic a

11. See also (Descartes 1996, 5: 175) from the *Conversation with Burman*. Burman presumably asked about Descartes’ critique of logic (“p. 15, with regard to logic”) and Descartes allegedly remarked: “This really applies not so much to logic, which provides demonstrative proof on all subjects, but to dialectic, which teaches us how to hold forth on all subjects. (p. 15: ad logicam: Ea potius est Dialectica, cū doceat nos de omnibus rebus disserere, quā Logicā, quae de omnibus rébus demonstrationes dat.)”

science or an art? What is its object or its subject? What are its parts? Let us briefly survey the range of previous answers to such questions by early modern scholastics.

### 1. The Preliminary Questions in Scholastic Logic

Scholastic textbooks usually begin with some standard questions about the discipline to be discussed, regardless of whether the discipline is logic, ethics, physics, or metaphysics. These questions normally treat the subject and aim of the discipline and its status as science or art, theoretical or practical endeavor; they often end by outlining the divisions and parts of the discipline at stake. Thus, logic textbooks usually start with a discussion of the status of logic, whether it is a “science,” like the branches of philosophy, physics and metaphysics, or not. The disciplines are divided into those dealing with contingent things, such as the arts, and those dealing with necessary things, such as the sciences. They are also divided into the theoretical—namely, metaphysics or natural theology, physics, and mathematics—and practical, such as ethics and politics. The theoretical disciplines are properly called sciences because they teach the knowledge of things through their own causes. Logic fits badly within these classifications: it does not look like a science or an art: it is neither theoretical nor practical; it is not productive, like an art; and does not treat necessary things or make a thing known through its causes. There are, however, different ways of thinking about the arts as productive. While logic does not actually produce anything sensible or enduring, it can be called an art because it directs an action; in the case of logic, this would be the production of an intellectual action, as in reasoning.<sup>12</sup>

The question of whether logic is a science would also depend upon the resolution of another question, concerning the object of logic. The Thomist opinion about the formal object of logic is the “being of reason” which directs the three operations of the mind.<sup>13</sup> In his *Commentary on Aristotle’s Metaphysics*, Aquinas states:

There are two kinds of beings: beings of reason and real beings. The expression being of reason is applied properly to those [second] intentions which reason derives from the objects it considers, for example, the intentions of genus, species and the like, which are not

12. See de Ceriziers 1643, p. 4, among others.

13. Another opinion about the formal object of logic is the nominalist one, that words are the object of science. But, as Goudin indicates in opposition to this, “the sciences, in fact, do not treat words, but the things signified by them . . . . It is clear that medicine does not treat the word illness, but the thing that the word signifies” (Goudin 1726, 1: 101).

found in reality but are a natural result of the consideration of reason. And this kind of being, i.e., being of reason, constitutes the proper subject of logic. (Aquinas 1915, 4.4.5.)<sup>14</sup>

Hence logic is not about real beings or first intentions (such as man, mortality, etc.), but second intentions (such as predicate, genus, species, etc.), which reason derives from the objects it considers; these are not found in reality but are a result of the consideration of reason. While most Thomists think of logic as a science concerned with beings of reason, some textbook authors argue that these beings of reason are imaginary—in effect, non-beings. This causes them to reject logic as a science, properly speaking, because its demonstrations will be about fictive objects, not about things through their causes.<sup>15</sup> But others reply that logic is a science, given the certainty of its demonstrations, which, they assert, are infallible and as certain as the science acquired by the knowledge of things through their own causes.<sup>16</sup> This is similar to the conclusion used to affirm mathematics as a science, given that mathematics is also not about real beings but deals with abstractions.<sup>17</sup>

Those who reject “beings of reason” as the object of logic usually consider, with the Scotists, logic to be an art of mental discourse whose aim is the perfection of the operations of the mind.<sup>18</sup> This creates a certain convergence in early modern logic: whether one is a Thomist or a Scotist, late Scholastics tend to agree that the parts of logic are the operations of the understanding.<sup>19</sup> For example, Eustachius a Sancto Paulo structures his *Logic* (Part I of his 1609 *Summa Philosophiae Quadripartita*) as a treatise on the three operations of the mind. As he says, the first operation of the mind concerns “things presented to it by a kind of simple vision, without affirmation or denial,” that is, “simple

14. “quia ens est duplex: ens scilicet rationis et ens naturae. Ens autem rationis dicitur proprie de illis intentionibus, quas ratio adinvenit in rebus consideratis; sicut intentio generis, speciei et similium, quae quidem non inveniuntur in rerum natura, sed considerationem rationis consequuntur. Et huiusmodi, scilicet ens rationis, est proprie subiectum logicae.” When Goudin quotes this text, he inserts *secundis* as modifier of *intentionibus*, so that the point would not be lost: “Ens autem rationis dicitur proprie de illis secundis intentionibus” (Goudin 1726, 1: 103).

15. See for example Dupleix 1984, pp. 45–8, 54.

16. Dupleix 1984, pp. 57–8, for example.

17. Dupleix 1984, p. 32.

18. See above, note 4 for various ways of referring to this art. See also Petrescu 2018 for further qualifications on “Scotist” logic.

19. The doctrine has it has its roots in the sixteenth century; Thomists in the seventeenth century also argue that it can be found in Thomas Aquinas, as Scotists do for Scotus. One can also find textbook authors, such as Dupleix, who think that logic is an art of discourse, but who arranges his textbook in a traditional way, with chapters about terms, propositions, syllogisms, etc.

apprehension.” Simple apprehension or cognition of the mind is divided into two kinds, the first confused, the second distinct:

The first involves only the intellection of what a word signifies; the second involves not merely what the word signifies but also a clear and distinct conception of the thing that the word signifies. The first may be said to be the apprehension of a word or a term, the second of a nature and essence. The former is shared by everyone who is familiar with language, including common people and peasants; the latter is found in the wise, who have explored the natures of things.<sup>20</sup>

Simple apprehension is to be contrasted with the second operation, concerned with truth and falsity, in which the mind “compares things and assents or dissents to them by denying,” and the third operation where “from the many things thus collected together the mind infers something distinct from them by a process of reasoning or argument”; the third operation is then called “discourse or argument” (Eustachius a Sancto Paulo 1629, p.12). Despite this nearly unanimous agreement about the parts of logic, earlier textbooks—as, for example, the Coimbra’s *Dialectica* and Franciscus Toletus’ *Commentary on Aristotle’s Logic*—were structured instead as commentaries on Aristotle’s *Organon* (*Categories, On Interpretation, Prior Analytics, Posterior Analytics, Topics, and Sophistical Refutations*), and concerned terms, propositions, the formal and material conditions for demonstrative syllogisms, and probabilistic and sophistical syllogisms. Still, there was a realization that it could be done otherwise; Toletus, who organizes his textbook in a fairly traditional way, rehearses several possible divisions of Logic in his sixth preliminary question, including one that would use the “three operations of the intellect.”<sup>21</sup>

## 2. The Preliminary Questions for the Cartesians and Descartes

The view that logic is an art whose end is the perfection of the operations of the understanding is not a fully settled doctrine for the late Scholastics but becomes more so as the century progresses. Moreover, it gets subsumed into Cartesian logic, but with an important difference, that method, considered

20. “Illa dicitur, cùm quid vocabulum significet duntaxat intelligitur; haec verò, cùm non tantùm quid vox significet, sed etiam quid sit res significata clarè et distinctè concipitur: illa termini seu vocis, haec naturae et essentiae apprehensio dicitur: illa omnibus qui voce nôrunt, ut plebeiis et rusticis, communis est; haec in sapientibus duntaxat, qui exploratas rerum naturas habent, reperitur.” Eustachius a Sancto Paulo 1629, p. 15.

21. “Triplex autem est intellectus operatio: Prima, simplicium apprehensio, qua res ipsas singulas per se intelligimus: Secunda, compositio, seu Divisio, qua res intellectas unam alteri copulamus: Tertia, ratiocinatio est, qua ex noto ignotum discurretes decidimus: quae operationes similes sunt sermoni” (Toletus 1572, fol. 9).

as the fourth operation of the understanding,<sup>22</sup> is given special emphasis. The *Port-Royal Logic* of Antoine Arnauld and Pierre Nicole, the *Logique* of Régis, and *Logick* of Le Grand are all divided into four parts, constituted by the “four principal operations of the mind” (Arnauld 1662, p. 27; Régis 1691, 1: 1; Le Grand 1694, 1: 2): I. Perceiving, involving ideas.<sup>23</sup> II. Judging, encompassing truth and falsehood. III. Reasoning (or discourse). And IV. Ordering, resulting in method. Régis calls his logic “La Logique ou l’art de penser” in parallel with the Port-Royal title; Le Grand asserts that “**Logick** is nothing else, but the *Art of right Thinking*, or of *using our Reason aright*; where by the word *Thinking* we do not only understand simple Idea’s or Notions, but also *Judgments* and *Discourses*. . . . Now, that a Man may use *right Reason*, and be able to frame his *Thoughts* aright, and interpret them to others; it is necessary for him to *Perceive aright*, *Judge aright*, *Reason aright*, and *Order aright*” (Le Grand 1694, 1: 1).<sup>24</sup>

Are the Cartesians following Descartes in this or are they imposing a late Scholastic framework onto Descartes’ thoughts? To answer this question, we would have to construct Descartes’ answers to the preliminary questions from the very little he says about such things in his works; our evidence would be the *Regulae* and the *Discourse*, though we should pay careful attention to *De Methodo*, the Latin version of the *Discourse*, because that vocabulary is somewhat richer, allowing Descartes to make clearer some distinctions that are not fully evident in the French. Take for example the very well-known opening paragraphs of the *Discourse* where Descartes is trying to put forth a doctrine about whether and how one can improve one’s “mind.” The first sentence of the *Discourse* states that “Good sense is the best distributed thing in the world, for everyone thinks himself to be so well endowed with it that even those who are the most difficult to please in everything else are not at all wont to desire more

22. There are scholastic textbook writers who argue for four operations of the mind, adding method or order, or three operations, plus method. Most simply fold method into the third operation; Eustachius oddly places method in the second.

23. The Port-Royal term is “conceiving.” However, Arnauld, Régis, and Le Grand are in agreement about the operation. Port Royal asserts “we call *conceiving* the simple view we have of things presented to our mind . . . and the form by which we represent these things to ourselves is called *idea*” (Arnauld 1662, p. 27). Régis echoes: “Perceptions are what we call in general ideas and we name ideas the simple view of things that present themselves to the soul without affirmation or negation” (Régis 1691, 1: 1). Le Grand affirms: “when we frame the *Species* of any thing by Thinking, the first view of our *Mind*, by which it represents and conceives the Thing as present, is called *Perception*, or in other words, *The first Operation of the Mind*, or *Simple Apprehension*,” (Le Grand 1694, 1: 2).

24. This is also the logic of Gassendi in the *Syntagma* (Gassendi 1658, 1: 29, 81) and what is represented as Gassendi’s logic by Bernier in the *Abrégé* (Bernier 1678, 1: 1–5).

of it than they have.”<sup>25</sup> Although it sounds a bit like a self-referential joke, Descartes is serious about the main claim; he immediately asserts “It is not likely that everyone is mistaken in this.”<sup>26</sup> Here, “good sense” translates *bon sens* in the 1637 *Discours* and *bona mens* in the 1644 *De Methodo*. Moreover, the Latin text reinforces that it is a “better mind (*meliorum mentem*)” that people do not usually desire more of. Descartes then supports his view by asserting “the power of judging well and of distinguishing the true from the false (which is, properly speaking, what people call “good sense” or “reason”) is naturally equal in all men, and that the diversity of our opinions does not arise from the fact that some people are more reasonable than others.”<sup>27</sup> The view is clear: good sense (*bons sens, bona mens*), reason (*la raison, recta ratio*), the power of judging well and distinguishing the true from the false do not admit of degree. They are all equal in humans. These are immediately contrasted with another series of mental faculties that do in fact admit of a degree. Descartes asserts: “it is not enough to have a good mind”; here “mind” is *esprit* in French, but *ingenium* in Latin. And he follows up with examples of unequal mental powers: “For myself, I have never presumed that my mind was in any respect more perfect than that of ordinary men. In fact, I have often desired to have as quick a wit, or as keen and distinct an imagination, or as full and responsive a memory as some other people.”<sup>28</sup> So what

25. “Le bon sens est la chose du monde la mieux partagée: car chacun pense en être si bien pourvu, que ceux même qui sont les plus difficiles à contenter en toute autre chose, n’ont point coutume d’en désirer plus qu’ils en ont” (Descartes 1996, 6: 1–2). “Nulla res aequabilius inter homines est distributa quam bona mens: eâ enim unusquisque ita abundare se putat, ut nequidem illi qui maximè inexplebiles cupiditates habent, et quibus in nullâ unquam aliâ re natura satisfacit, meliorem mentem quam possideant optare consueverint” (Descartes 1996, 6: 540). The opening passage in *Discours* has received a lot of attention. See in particular, Gilson 1925, p. 86, and Sepper 1996, II.3.

26. “En quoi il n’est pas vraisemblable que tous se trompent” (Descartes 1996, 6: 2). “Quâ in re pariter omnes falli non videtur esse credendum” (Descartes 1996, 6: 540).

27. “la puissance de bien juger, et distinguer le vrai d’avec le faux, qui est proprement ce qu’on nomme le bon sens ou la raison, est naturellement égale en tous les hommes; et ainsi que la diversité de nos opinions ne vient pas de ce que les uns sont plus raisonnables que les autres” (Descartes 1996, 6: 2). “vim incorruptè iudicandi & verum à falso distinguendi (quam propriè bonam mentem seu rectam rationem appellamus) naturâ aequalem omnibus nobis innatam esse. Atque ita nostrarum opinionum diversitatem, non ex eo manare quòd simus alii alii majore rationis vi donati” (Descartes 1996, 6: 540).

28. “Car ce n’est pas assez d’avoir l’esprit bon .... Pour moi, je n’ai jamais présumé que mon esprit fût en rien plus parfait que ceux du commun; même j’ai souvent souhaité d’avoir la pensée aussi prompte, ou l’imagination aussi nette et distincte, ou la mémoire aussi ample, ou aussi présente, que quelques autres” (Descartes 1996, 6: 2). “Quippe ingenio pollere haud sufficit.... Ego sanè nunquam existimavi plus esse in me ingenii quam in quolibet è vulgo: quinimo etiam non rarò vel cogitandi celeritate, vel distinctè imaginandi facilitate, vel memoriae capacitate atque usu, quosdam alios aequare exoptavi” (Descartes 1996, 6: 540).

admits of a degree is having a good mind, one more perfect than others; and here again the word for “mind” is *esprit* in the French and *ingenium* in the Latin, and not *bona mens*, which might have been expected. The examples of these concern wit or quick thinking (*pensée, cogitatio*), imagination, and memory.

Descartes reiterates his thesis, making it palatable to scholastics, and introduces his goal of trying to perfect the mind:

Other than these I know of no qualities that serve in the perfecting of the mind (*esprit, ingenium*), for as to reason or sense, inasmuch as it alone makes us men and distinguishes us from the beasts, I prefer to believe that it exists whole and entire in each of us, and in this to follow the opinion commonly held by the philosophers, who say that there are differences of degree only between *accidents*, but not at all between *forms* or natures of individuals of the same *species*.<sup>29</sup>

Incidentally, one place where scholastics assert such things is usually in the first part of their Logic, dealing with the categories; for example, Pierre du Moulin says about the category of substance: “No substance is more substance than another substance, as a horse is no more horse than another, although it may be a better horse.”<sup>30</sup> Descartes ends by asserting that his method will allow one to increase that perfection: “I have formed a method by which, it seems to me, I have the means to increase my knowledge by degrees and to raise it little by little to the highest point which the mediocrity of my mind and the short duration of my life will be able to allow it to attain.”<sup>31</sup> Here again, reason—*la raison, ratio*, which is the same as *bon*

29. “Et je ne sache point de qualités que celles-ci, qui servent à la perfection de l’esprit: car pour la raison, ou le sens, d’autant qu’elle est la seule chose qui nous rend hommes, et nous distingue des bêtes, je veux croire qu’elle est tout entière en un chacun, et suivre en ceci l’opinion commune des philosophes, qui disent qu’il n’y a du plus et du moins qu’entre les *accidents*, et non point entre les *formes*, ou natures, des *individus* d’une même *espèce*” (Descartes 1996, 6: 2–3). Note the odd sounding *la raison ou le sens*, which does not occur in the Latin. “Nec ullas ab his alias dotes esse novi quibus ingenium praestantius reddatur. Nam rationem quod attinet, quia per illam solam homines sumus, aequalem in omnibus esse facilè credo: neque hic discedere libet à communi sententiâ Philosophorum, qui dicunt inter *accidentia* sola, non autem inter *formas substantiales individuum ejusdem speciei*, plus & minus reperiri” (Descartes 1996, 6: 540–41).

30. “Nulle substance n’est plus substance que l’autre, ny un cheval n’est pas plus cheval que l’autre, encore qu’il soit meilleur cheval” (du Moulin 1644, 1: 5).

31. “J’ai formé une méthode, par laquelle il me semble que j’ai moyen d’augmenter par degrés ma connaissance, et de l’élever peu à peu au plus haut point, auquel la médiocrité de mon esprit et la courte durée de ma vie lui pourront permettre d’atteindre” (Descartes 1996, 6: 3). “Quibus constat Methodus, cujus ope gradatim augere scientiam, illamque tandem, quam pro ingenii mei tenuitate & vitae brevitate maximam sperare liceat, acquirere posse confido” (Descartes 1996, 6: 541).

*sens, bona mens*<sup>32</sup>—is equal in all people (akin to their nature) and mind—*esprit, ingenium*,<sup>33</sup> together with wit, imagination, and memory—is unequal in people (akin to accidents of their nature), that is, capable of degrees and of being perfected by method.<sup>34</sup>

These elements can be found in Le Grand's compendium of Cartesian philosophy.<sup>35</sup> In a chapter of the *Institutions of Philosophy* entitled "Of the Faculties of the Human Mind, Intellect, Imagination, Will, Memory, Reminiscence, and Wit," Le Grand discusses the various operations of the mind (Le Grand 1694, pp. 328–31). He distinguishes intellect, will, and imagination in the first nine sections, and discusses wit in sections 16–20: what wit is, the diversity of wit, the qualities of wit, and the celerity of thinking, ending up with a comparison between wit and reason. According to Le Grand, there is a great diversity of wit, but it cannot be imputed to the diversity of souls: "for all *Souls* are *Intellectual* and *Incorporeal*, and ... they seem, according to nature to be altogether equal." The variety of wit

32. Not all occurrences of *bons sens* are translated as *bona mens*. There are three instances of *bon sens* in the *Discours* other than in the beginning paragraphs: Descartes 1996, 6: 13, translated as *ratione naturali* in Descartes 1996, 6: 546; Descartes 1996, 6: 24, translated as *bona mens* in Descartes 1996, 6: 553; and Descartes 1996, 6: 77: un-translated in *De Metodo*. There are four instances of *bon sens* in the correspondence, all of them translated differently in the *Opuscula* (Descartes 1996, 1: 366: "quam si exinde quod dicerem, sufficere ut quis sit recto iudicio praeditus, ad hoc ut sit vir bonus"; Descartes 1996, 1: 552: "Quis enim sana mente praeditus dixerit ex nitidula aut scintilla ignea posse satis materiae ad implendam totam sphaeram"; Descartes 1996, 3: 499, "Nullus autem dubito, quin nemo futurus sit, cui tantum est sana sinciput, qui hic quippam culpae ausit, quin imo non potius ut summopere haec laudaturus"; and Descartes 1996, 4: 237 "et quemadmodum existimo nulle esse in orbe bonum praeter recte rationem, quod possi dici absolute bonum, ita etiam statuo nullum esse malum ex quo rationi ope aliquid utilitatis percipi non possit." See also *bons sens* in 9a: 12 as the translation of *sanae mentis* in Descartes 1996, 7: 16.

33. *Ingenium* is treated as a potential intellectual virtue in Dupleix's *Ethique*: "il y a grand bruit entre les Scolastiques pour sçavoir si outre les cinq vertus intellectuelles que nous venons de colliger par leur fin, il y a d'autres ... comme sont l'instruction ou discipline, la croyance, l'opinion, la pensée, la memoire, la subtilité d'esprit: que les Latins appellent *ingenium*, la ratiocination, et autres semblables" (Dupleix 1993, p. 349). Dupleix links subtlety of mind (*ingenium*) with memory, both sensible and intellectual, and imagination: "La memoire et subtilité d'esprit sont des facultez de l'ame separées de l'entendement. Car la subtilité de l'esprit est jointe à la fantaisie ou imagination, laquelle estant prompte, vive et feconde est appellée *subtilité d'esprit*: et la memoire tant sensible qu'intellectuelle est une faculté distincte et separée de l'entendement" (Dupleix 1993, pp. 349–350).

34. This also looks like the Cartesian successor to the scholastic distinction between natural and artificial logic. For more on Descartes, the *ingenium*, and logic, see Ariew 2020.

35. As we've already indicated, Le Grand likely does not know the *Regulae*; but it is possible that he is sufficiently well attuned to Descartes' thought—including his logic—with just the assertions from the published works plus the posthumous works (such as Clerselier's edition of Descartes' correspondence) from the second half of the seventeenth century.

proceeds from “the variety of the *Organs*, and especially of the Brain: We must understand not *human reason* pure and abstracted from the *Body*, but the same so far as it is perfected or hindered, in any manner, by the disposition of the *Body*.” Le Grand then refers to Descartes’ *Discourse* and mentions that Descartes knows no qualities of wit other than “*Celerity of Thinking, Facility of distinctly Imagining, and Capacity and Use of Memory*,” by which “*Wit* can be rendered more excellent.” According to Le Grand, Descartes distinguishes wit from “*right Reason or a good Mind*, that is, a *Power of judging incorruptly and discerning true from false*, [which] *he concludes* to be equal in all.” The chapter ends with advice on improving one’s celerity of thinking, facility of imagining, and capacity of memory. Since they all depend on the disposition of the body, the inequality of these operations proceeding from the inequality of one’s organs, these capacities are improved by use and rendered familiar by habit and custom.

Le Grand’s *Institutions of Philosophy* began in 1671 as *Philosophia veterum e Mente Renati Descartes more Scholastico breviter Digesta*. It was expanded throughout the 1680s as *Institutio Philosophiae secundum Principia Renati Descartes: Nova Methodo Adornata et Explicata. In Usus Juventutis Academicæ*. The 1680 fourth edition of the latter corresponds reasonably well to the 1694 English translation.<sup>36</sup> There, every instance of “wit” was originally an instance of *ingenium*. And *ingenium* is contrasted with “right reason or a good mind.”<sup>37</sup> Descartes and Le Grand’s use of *ingenium* does not diverge from standard scholastic terminology. In his 1613 *Lexicon Philosophicum* Rudolph Goclenius spends a couple of pages in defining *ingenium*: “*Ingenium* most properly stated is the constitution of the faculty of the rational soul for understanding, discovering, or learning. *Ingenium* is also the natural aptitude or faculty by which we learn and through which we ourselves think or discover.” Moreover, Goclenius specifies the varieties of *ingenium* as depending “sometimes on the temperament of the body, sometimes on the various conditions of the mind, the constitution of the organs, and the assisting faculties,” and asserts that its

36. The fourth edition of *Institutio Philosophiae* continued to be published unchanged even after the publication of the enhanced English edition.

37. “rectam vero rationem, seu bonam Mentem” (Le Grand 1680, p. 604; see also pp. 600–05).

38. “*Ingenium* maxime proprie dictum, est facultatis rationalis animi constitutio, ad intelligendum aliquid, sive inveniendo, sive discendo. Seu *ingenium* est naturalis aptitudo seu facultas, qua nos discimus, et per nos ipsos cogitamus, seu invenimus aliquid.... Varietas ingenii pendet tum ex temperamento corporis, tum ex varia dispositione mentis, et constitutione organorum, et facultatum administrarum.... Distinctiones ingenii variae sunt. *Ingenium* enim subtile est, vel crassiusculum, acutum vel hebes. Perspicax vel minus perspicax, velox vel tardum, acre vel minus acre” (Goclenius 1613 pp. 241–42).

distinctions are numerous, “for the *ingenium* is subtle or dense, sharp or dull, penetrating or less penetrating, quick or slow, sharp or less sharp.”<sup>38</sup>

So far, we have argued that *ingenium* or wit can be improved by method through constant use. This result is situated in the *Discourse*, which, like the *Regulae* before it, notoriously contrasts the positive effects of method with what he calls the negative effects of mathematics and logic. We have not shown that Descartes considers logic to be an art, and not a science. However, in the *Preface* to the French edition of the *Principles*, where Descartes calls his method a logic and gives a positive slant to his logic—that logic “teaches us how best to direct our reason in order to discover those truths of which we are ignorant”—he describes the tree of philosophy, including all the sciences, but fails to mention logic, which he places outside the tree, as preliminary to applying oneself to true philosophy, and by inference to the sciences; it is, of course possible that Descartes does not consider logic to be either science or art. Le Grand’s reading of Descartes allows for this possibility. He gives a generally positive slant to logic in a chapter entitled, “Of the true Use of Logick, shewing that Logick is useful and necessary to the Conduct of a Rational Life”:

True it is, that *Logick* seems to have declined from its primitive Majesty, since it now chiefly considers *Forms*, and is in a manner wholly taken up with the Resolving of unprofitable *Questions*: Yet neither it is wholly to be undervalued upon that account, since those *Questions* exercise the Wit of Men, and are not a little conducive to the examining of the Difficulties we meet with in other Sciences. As *Geometricians*, by exercising themselves in the crabbed Questions of *Algebra*, which are altogether Abstracted, and of no use for the Conduct of Life, are nevertheless thereby disposed for the understanding of other difficult *Problems*, that are of great use in the Life of Man. In a word, which way soever we consider *Logick*, we shall find it to be of use, and in that regard not inferiour to the *Arts* or *Sciences*. (Le Grand 1694, 1: 3)

In this passage Le Grand praises the practice of logic, as he says, so as to “exercise the Wit of Men.” We should stress that in the Latin version of this text, it is, of course, the *ingenium* that needs to be exercised, that is, to

39. “Verum est, quod temporis decursu, a primæva majestate decidisse videtur; quum nunc, non nisi terminos consideret, et inutilibus quaestionibus dissolvendis tota occupetur. Non tamen ob id penitus vilipendendam esse censeo, cum illae quaestiones ingenii exercendis inserviant, et ad difficultate in aliis scientiis examinandas haud parum conducant. Ita Geometrae sese arduis Algebrae quaestionibus exercendo, quae maxime abstractae sunt, et vitam gubernendam plane inutiles, idonei demum efficiuntur difficilioris problematis explicandis, quae usui in vita sunt. Quo in statu Logica consideretur, suum munus habet, et caeteris artibus aut scientiis utilitate non cedit” (Le Grand 1680, pp. 1–2).

be perfected.<sup>39</sup> And, as we have already pointed out, Le Grand does formally assert that logic is the art of right thinking.

Let us conclude that Descartes and the Cartesians are likely in agreement that logic is an *ars disserendi* whose aim is to perfect the *ingenium* by the exercise of its operations, ideating, judging, discoursing, and ordering.<sup>40</sup> We can see that these elements are the underpinning of both the *Regulae* and the *Discourse*, and thus, like Baillet we can understand these two works as embodying Descartes' logic. It is difficult to see the *Geometry* as a logic except in a tangential manner, in parallel to exercising the mind. As for the *Meditations*, it is of course Descartes' work on Metaphysics or First Philosophy. Still, we can agree with Gassendi that it exemplifies Descartes' logic, and not just because of the principle of truth that Descartes posits in the work: After some preliminary exercises to divorce the mind from the senses in Meditation One, the meditator is in the position to intuit a simple apprehension, a clear and distinct idea of a nature or essence, that is, first the self and then God, in Meditations Two and Three. The meditator then moves to a discussion of judgment, of the True and of the False, together with the criterion of truth, that everything I clearly and distinctly perceive is true, in Meditation Four. This allows the meditator to discourse or construct arguments, first about essences and then about existences, in Meditations Five and Six.<sup>41</sup> The *Meditations*, while being a work on Metaphysics or First Philosophy, still puts the structure of Descartes' logic on display.<sup>42</sup>

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40. But see Kambouchner 2020, who argues that Descartes' method *is* an "art."

41. This might allow us to make some sense of Descartes' assertion to Caterus: "in this idea is contained what God is, at least insofar as he can be understood by me; and, according to the rules of the true logic [originally: my logic], one should never ask whether something exists unless one first understands what it is." According to Descartes' logic, that is, the true logic, Descartes does apprehend the idea of God before determining whether God exists. The "rules of the true logic" would also refer to a stage after simple apprehension, within judgment and discourse, where essences are examined before existences.

42. I am very grateful for the many useful comments by an anonymous reviewer for *Perspectives on Science*.

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