THE LAW OF NATIONS TREATED ACCORDING TO THE SCIENTIFIC METHOD

NATURAL LAW AND
ENLIGHTENMENT CLASSICS

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THE LAW OF NATIONS TREATED ACCORDING TO THE SCIENTIFIC METHOD

INTRODUCTION

Christian Wolff (1679–1754) was one of the most famous and influential German thinkers in the first half of the eighteenth century. He began his academic career as a mathematician, but over the course of almost five decades he taught and wrote on nearly every aspect of eighteenth-century philosophy, including the human mind, economics, political science, and physics, as well as logic, metaphysics, ontology, natural theology, natural law, and moral philosophy. Uniting Wolff's many different intellectual pursuits was his commitment to the "scientific method." This method, as Wolff understood it, was a form of reasoning that began from principles that were certain, and in which all steps of the argument were so closely linked to each other that the conclusions to which they led were necessarily true.[1] Although the "scientific method" was exemplified particularly well by mathematics, Wolff believed that it was also applicable to philosophical argument. Wolff's *Law of Nations* is one example of the "scientific method." He published this work in 1749, toward the end of his life, after his triumphant return to the territories of the Prussian king, from which he had been banished in 1723 after his philosophy had been judged offensive and dangerous by the then ruler, Frederick William I. In this introduction a brief biography of Wolff will be followed by a discussion of the main principles of his "scientific method" and a short note on the text and translation of his *Law of Nations.*

1. "[A]sserta demonstrandi, hoc est, ex principiis certis & immotis per legitimam consequentiam inferendi." "Discursus praeliminaris de philosophia in genere," chap. 2, §30, in Wolff, *Philosophia rationalis sive logica* (1740; ed. J. École, Hildesheim: Georg Olms, 1983), vol. 1, p. 14.

Christian Wolff (1679–1754)

Christian Wolff was born in 1679 in Breslau, a flourishing and wealthy Silesian city of around 40,000 inhabitants.[2] The dominant religious confession in Breslau was Lutheranism, but the city also had a significant Catholic population because the province of Silesia was under Austrian Habsburg rule. Wolff, who was a Lutheran, thus grew up in an environment in which he was constantly reminded of the existence of confessional differences. Even schoolboys appear to have debated theological questions, and Wolff said he often attended mass in order to study Catholic beliefs and practices.[3] Looking back on his childhood, Wolff later claimed that his interest in mathematics had been inspired by a desire to establish an intellectual foundation for resolving the kinds of religious disagreements he had witnessed in his early life.[4]

Christian Wolff's father, Christoph Wolff, was a tanner. Unusually for an artisan, he had attended a *Gymnasium*, a school that prepared boys for entry to a university. Although Christoph Wolff had not continued his education beyond school, he had vowed that his son Christian would do so and train for the Lutheran clergy.[5] After completing the Lutheran *Magdalenen-Gymnasium* in Breslau with great success, Christian Wolff enrolled at the University of Jena as a student of divinity in 1699. It soon became clear that Wolff was more interested in mathematics and physics than theology. In his first few months at Jena he went to lectures on the theories of Johann Christoph Sturm (1635–1703), a famous mathematician and natural scientist who was teaching at the University of Altdorf near Nuremberg.[6] Eventually, Wolff would abandon a clerical career, though he later claimed that he had hesitated for a long time, because he had wanted to obey his father's wishes.[7] He even preached in the Leipzig

2. Marcel Thomann, introduction to *Jus gentium* by Christian Wolff (1749, Halle; ed. Marcel Thomann, Hildesheim: Georg Olms, 1972), p. vii.

3. Christian Wolff, *Christian Wolffs eigene Lebensbeschreibung*, ed. Heinrich Wuttke (Leipzig: Weidmann, 1841), p. 117.

4. Wolff, *Lebensbeschreibung*, pp. 120–21.

5. Wolff, *Lebensbeschreibung*, pp. 111–12.

6. Wolff, *Lebensbeschreibung*, p. 120.

7. Wolff, *Lebensbeschreibung*, p. 121.

Nicolai Church as late as 1706.[8] It may be that his protestations about his plans to become a clergyman were mainly a reflection of filial piety, but whatever the reasons for his final decision, it does not seem to have been motivated by doubts about religion. Wolff remained a conventionally pious Lutheran in many respects until the very end of his life.

In 1702 Wolff traveled to Leipzig to take his examination for a master's degree in philosophy. He returned to Jena to work on a dissertation that would qualify him for a university teaching post in the faculty of philosophy. This dissertation was *Universal Practical Philosophy, Written according to the Mathematical Method*, which Wolff defended successfully at Leipzig in January 1703.[9] It was read by the Leipzig professor of moral philosophy, Otto Mencke, who was also editor of the most important academic review journal in the Holy Roman Empire, the Leipzig *Acta Eruditorum*. Mencke was eager to recruit Wolff as a contributor to the journal and asked Gottfried Wilhelm Leibniz to provide an opinion on Wolff's dissertation. Leibniz responded by generously praising Wolff's work and sent him a congratulatory letter, thereby inaugurating their correspondence, which continued until Leibniz's death in 1716.[10]

By the time Wolff was awarded the title of lecturer (*magister legens*) in 1703 he was regarded as a promising young scholar. He was soon offered and accepted a position teaching mathematics at the University of Leipzig, remaining there until 1706. He then agreed to take up a position at the University of Giessen. While traveling to his new post, however, he was persuaded by the more prestigious University of Halle to join its faculty as a professor of mathematics and moved there instead.

At first Wolff was disappointed by the state of teaching at Halle. Mathematics, he said, had been neglected, and philosophy was dominated by the doctrines of Christian Thomasius (1655–1728), whose outlook was very different from Wolff's.[11] Thomasius had little interest in mathematics. He

8. Wolff, *Lebensbeschreibung*, p. 128.

9. Wolff, *Philosophia practica universalis, mathematica methodo conscripta* (Leipzig, 1703).

10. Wolff, *Lebensbeschreibung*, p. 133.

11. For Thomasius's main writings on moral and political subjects, see his *Institutes of Divine Jurisprudence, with Selections from the Foundations of the Law of Nature and Nations*, ed. and trans. Thomas Ahnert (Indianapolis: Liberty Fund, 2011), and

was also far more skeptical than Wolff about the powers of the human intellect, arguing that wisdom was founded in the proper management of the passions, which he opposed to the subtle but vain and fruitless reasoning of "scholastic" philosophers, among whom Thomasius included his orthodox Lutheran opponents.[12] Initially, Wolff confined himself to lecturing and writing on mathematics, staying clear of philosophical subjects. But when the professor of medicine and physics, Friedrich Hoffmann, was appointed personal physician to the Prussian king and left Halle for the court at Berlin, Wolff replaced him as lecturer in natural philosophy. Wolff now had the opportunity of expanding the range of his teaching. In 1709 he published a work on the physics of air, the *Aërometriae elementa*.[13] In the following years Wolff extended his teaching to other parts of philosophy, including metaphysics, ethics, and politics. In 1720 his German treatise on metaphysics appeared, *Rational Thoughts concerning God, the World, and the Soul of Man, and All Things in General*,[14] followed by his treatise on ethics, *Rational Thoughts concerning the Actions of Humans*,[15] and in 1721 his treatise on politics, *Rational Thoughts concerning the Social Life of Humans, in Particular the Commonwealth, Communicated for the Purpose of Furthering the Happiness of Humankind*.[16]

The broadening of Wolff's interests, however, brought him into conflict with his academic colleagues. Some members of the Halle theological faculty were becoming especially hostile to him. Wolff's most prominent critic among them was the Pietist professor of theology, Joachim Lange, who would be the main person responsible for persuading Frederick

Essays on Church, State, and Politics, ed. and trans. Ian Hunter, Thomas Ahnert, and Frank Grunert (Indianapolis: Liberty Fund, 2007).

12. Thomas Ahnert, *Religion and the Origins of the German Enlightenment: Faith and the Reform of Learning in the Thought of Christian Thomasius* (Rochester, N.Y.: Rochester University Press, 2006). See also Carl Hinrichs, *Preußentum und Pietismus* (Göttingen: Vandenhoeck and Ruprecht, 1971), p. 389.

13. Christian Wolff, *Aërometriae elementa* (Leipzig, 1709).

14. *Vernünftige Gedanken von Gott, der Welt und der Seele des Menschen, auch allen Dingen überhaupt* (Halle, 1720). The book was printed in December 1719 but was released in the following year.

15. *Vernünftige Gedanken von der Menschen Thun und Lassen* (Halle, 1720).

16. *Vernünftige Gedanken von dem gesellschaftlichen Leben der Menschen und insonderheit dem gemeinen Wesen zur Beförderung der Glückseligkeit des menschlichen Geschlechtes mitgeteilt* (Halle, 1721).

William I to remove Wolff from his post in 1723. Wolff later suggested (probably not without some justification) that Lange had been envious of Wolff's popularity as a lecturer, but Lange and others, such as Johann Franz Budde at the University of Jena, also put forward genuine and well-founded philosophical criticisms of some of Wolff's key doctrines. Their concerns centered on Wolff's views on the foundations of moral obligation and on his notion of human free will. Wolff argued that moral conduct required no belief in a deity, a view he set out in a speech he gave on the occasion of demitting office as prorector of the university in July 1721, "On the Practical Philosophy of the Chinese."[17] According to Wolff, the ancient Chinese had had no clear idea of a deity, which, though they lacked Christian revelation, they might have derived from natural religion. The Chinese were not full-blown atheists. They believed in some kind of creator of the universe. But their knowledge of the divine attributes was so limited and confused that it was of no use for their moral theory. Even without a clear idea of a deity, however, Chinese philosophers had understood the principles of morality and been capable of acting according to them, because morality was founded on the obligation to strive toward the perfection of human nature.[18] Moral action depended on a clear and distinct idea of human nature, not belief in a deity. Acting immorally was always contrary to the idea of the perfection of human nature. It was also to the disadvantage of the agent, since

> [t]he property of good is to keep us in repose and tranquillity, and that of evil is to confuse everything, turning upside down and bringing

17. Christian Wolff, "Christiani Wolfii . . . Oratio de *Sinarum philosophia practica*," in Christian Wolff, *Meletemata mathematico-philosophica quibus accedunt dissertationes,* "Sectio III. Scripturas Wolfianas varii argumenti continens velut programmata, orationes, epistolas, praefationes" (1755; Hildesheim: Georg Olms, 1974), pp. 22–126. For a modern edition and translation, see Christian Wolff, "Discourse on the Practical Philosophy of the Chinese (1721–26)," in *Moral Enlightenment: Leibniz and Wolff on China,* Monumenta Serica 26, ed. Julia Ching and Willard G. Oxtoby (Nettetal: Steyler Verlag, 1992), pp. 145–86.

18. On Wolff's theory of moral obligation, see Dieter Hüning, "Christian Wolffs Begriff der natürlichen Verbindlichkeit als Bindeglied zwischen Psychologie und Moralphilosophie," in *Die Psychologie Christian Wolffs: Systematische und historische Untersuchungen,* ed. Oliver-Pierre Rudolph and Jean-François Goubet (Tübingen: Max Niemeyer, 2004), pp. 143–67.

> about lasting chaos; the mind, which sees these possibilities in advance, turns to the attractions of good and hates evil, to the extent that it adheres to the judgement of reason. Consequently, we have a spur to seek the good that we know and to flee the evil that we recognize.[19]

Lange, by contrast, subscribed to a voluntarist view of moral obligation, according to which morality was binding because it was founded on the will of God, who was the lawgiver and judge of all mankind. Certain kinds of action might be advantageous, but they were not morally good unless they were commanded by a legitimate superior, such as God, who had the right to punish all transgressions of his law. Without a clear belief in God, morality lacked any solid foundation.

Another reason Wolff's philosophy occasioned controversy was that he appeared to deny the existence of free will. Lange, among others, accused him of "fatalism" and of reducing human beings to automata who had no power to choose their actions but were determined to act in certain ways by factors beyond their control. Without free will it was futile to teach morality, since nobody had the power to choose one kind of action over another. Lange was referring in particular to Wolff's work on metaphysics, *Rational Thoughts concerning God, the World, and the Soul of Man, and All Things in General* where Wolff had cautiously endorsed Leibniz's theory of a preestablished harmony as the best available explanation for the relationship between mind and body. The system of a preestablished harmony was a response to the classical problem in seventeenth- and eighteenth-century philosophy of how the human mind could influence and direct actions of the physical body, even though mind and body were two different kinds of substance: the mind was generally thought to be an immaterial being without spatial dimensions; the body was material and extended. It was difficult to imagine how the former could be the cause of movement in the latter. Leibniz had concluded that mind and body did not interact with each other causally at all. Each of the two followed its own internal and necessary laws of development. They only appeared to influence each other because God had taken care that the

19. Wolff, "Practical Philosophy of the Chinese," pp. 166–67.

changes in both were closely coordinated, like the movements of two synchronized clocks. This idea of a preestablished harmony, however, contradicted a conventional belief in the freedom of the human will. For if mind and body each followed its own necessary laws of change, humans appeared to have no power of acting differently from the way they did. Lange, for example, believed that the human will, in order to be free, had to be "indifferent" to several possible courses of action and capable of choosing between them. Wolff replied that the acts of human volition could never be free in the sense of being indifferent to various courses of action. Every act of the human will required a sufficient reason. Unless the will was determined by such a sufficient reason, the will would never arrive at a decision. The will, Wolff added, was nevertheless free, because its choices were not determined by external, physical causes, but by its own, internal reasons. It was therefore "free" in the sense of acting according to its own impulses.[20]

Wolff's critics replied that such a state of affairs would represent no genuine freedom at all. Humans had to have a capacity for choice between different actions, and the decisions of the will had to influence the actions of the body directly. Lange argued that this influence occurred by means of a "physical influx" (*influxus physicus*), which was probably the most common theory used to describe the relationship between mind and body. Wolff's theory, Lange claimed, was just a variation on the philosophical "fatalism" associated with the thought of the Dutch Jewish philosopher Baruch Spinoza, which made it impossible to hold humans morally accountable for their actions. It was on the

20. For an account of the controversy between Lange and Wolff, see Carl Hinrichs, *Preußentum und Pietismus* (Göttingen: Vandenhoeck and Ruprecht, 1971), pp. 388–441. For a discussion of the philosophical issue of "fatalism," see Bruno Bianco, "Freiheit gegen Fatalismus: Zu Joachim Langes Kritik an Wolff," in *Aufklärung und Pietismus,* ed. Norbert Hinske (Heidelberg: Lambert Schneider, 1989), pp. 111–55. See also Tim Hochstrasser, *Natural Law Theories in the Early Enlightenment* (Cambridge: Cambridge University Press, 2000), chap. 5; Thomas P. Saine, "Who's afraid of Christian Wolff?," in *Anticipations of the Enlightenment in England, France and Germany,* ed. Alan Charles Kors and Paul J. Korshin (Philadelphia: University of Pennsylvania Press, 1987), pp. 102–33; and Ian Hunter, *Rival Enlightenments: Civil and Metaphysical Philosophy in Early Modern Germany* (Cambridge: Cambridge University Press, 2001), pp. 265–73.

grounds of Wolff's "fatalistic" philosophical teachings that Lange finally persuaded King Frederick William I of Prussia to force Wolff into exile and forbid him on pain of death from returning. According to Wolff, the "soldier-king," as he was often known, was finally convinced by Lange's argument that it would no longer be possible to punish army deserters if Wolff's theory were true.[21] In November 1723, as soon as he had received the king's order to leave, Wolff departed for the University of Marburg, which had already offered him a professorial chair some months before. Toward the end of his reign, Frederick William acknowledged that Wolff's doctrines were probably not as harmful as he had been led to believe, and in 1739 gave Wolff permission to return and take up a chair at the University of Frankfurt an der Oder. Wolff declined the offer, but when Frederick William's son and successor Frederick II, later known as "the Great," invited him to return to Halle, he accepted. Wolff arrived in December 1740, eventually rose to the office of chancellor at the university, was made a baron of the Holy Roman Empire, and remained in Halle until his death in 1754.

The "Scientific Method" in Philosophy

Throughout his career Wolff followed what he called the "scientific method." His commitment to it is reflected in the titles of many of his main works. In 1728, for example, Wolff's *Rational Philosophy or Logic, according to the Scientific Method* appeared.[22] In 1730 he published his *Ontology*, which was, again, "according to the scientific method."[23] There followed several more works that were all "according to the scientific method": *Empirical Psychology,* 1732;[24] *Rational Psychology,* 1734;[25] *Natural Theology,* 1736;[26] *Universal Practical Philosophy*, published between

21. On Lange's accusation of "fatalism," see especially Bianco, "Freiheit gegen Fatalismus."

22. *Philosophia rationalis sive logica, methodo scientifica pertractata* (Frankfurt and Leipzig, 1728).

23. *Philosophia prima sive ontologia methodo scientifica pertractata* (Frankfurt and Leipzig, 1730).

24. *Psychologia empirica, methodo scientifica pertractata* (Frankfurt, 1732).

25. *Psychologia rationalis, methodo scientifica pertractata* (Frankfurt, 1734).

26. *Theologia naturalis, methodo scientifica pertractata* (Frankfurt, 1736–37).

1738 and 1739;[27] *The Law of Nature*, which appeared between 1740 and 1748;[28] and *Moral Philosophy or Ethics* (1750–53), to name just a few.[29] The model for this "scientific method" was mathematical reasoning, which, according to Wolff, was founded on clear and distinct notions, and in which each step of the argument followed necessarily from what went before. But the usefulness of the "scientific method" was not limited to mathematics; it extended to improving philosophical argument.

Many other thinkers similarly believed that philosophy might benefit from mathematical forms of reasoning. An important part in encouraging this belief was played by Descartes's mathematical discoveries in the first half of the seventeenth century, in particular his successful application of algebraic notation to the solution of geometrical problems. One main advantage of the use of algebraic notation, as Descartes and others argued, was that progression from one step in the solution of a geometrical problem to the next was always clear and perspicuous. Descartes distinguished this "modern" method from the approach of the ancient mathematicians such as Euclid or Pappus, who had relied on geometrical constructions rather than algebraic formulae to solve problems in geometry. The approach of these ancients meant that each step in the solution of a problem was always capable of being represented visually. This made it immediately evident how the solution was applicable to the relevant geometrical problem. It was less clear, however, how the principles on which this answer was based were discovered in the first place. The approach of the ancients seemed to depend on intuition and a process of trial and error, not a method that could be learned and then applied to other cases. Descartes argued that the system of algebraic notation, which he used and which had first been applied by the French mathematician François Viète (1540–1603) to equations with more than one unknown variable, was superior to ancient geometry because each step in the argument leading to the answer to the problem

27. *Philosophia practica universalis, methodo scientifica pertractata* (Frankfurt and Leipzig, 1738–39).

28. *Jus naturae methodo scientifica pertractatum*. 8 vols. (Frankfurt and Leipzig/Halle and Magdeburg, 1740–48).

29. *Philosophia moralis sive ethica, methodo scientifica pertractata*, 5 vols. (Halle, 1750–53).

was transparent, even if none of these steps could be expressed in pictorial terms as the geometric constructions of the ancient mathematicians could.[30] The method proposed by Descartes was to substitute variables for unknown lengths of lines and angles and express the relationship between these in algebraic formulae, which were then manipulated until a general solution for the geometrical problem had been found. This method of "analysis" (or *resolutio*), as Descartes called it, made it possible to ascend from the particular facts that required explanation to the general principles on which they depended. The particular facts that had been the starting point of the "analysis" could then be derived from these general principles by a reverse process of deductive reasoning, termed "synthesis" (or *compositio*), which moved from definitions to axioms to propositions about these particular facts. A powerful demonstration of the value of this method was Descartes's solution to Pappus's four-line problem, which had defeated ancient geometers, but which Descartes solved by using his analytical method.[31]

Not every prominent mathematician of the seventeenth century was won over by this "modern" method. Isaac Newton believed that one had to be able to picture each step of the solution to a geometrical problem. It was not possible to work blindly through a series of permutations of algebraic formulae that did not relate in any evident way to the geometrical figure in question and yet trust the correct result to emerge at the end. Contrary to Descartes, Newton believed that the ancient mathematicians had in fact possessed a proper method for solving geometrical problems, which had been lost and needed to be recovered.[32]

Many other thinkers, however, were persuaded by the apparent success of Descartes's method, which he had always intended to be applied

30. Stephen Gaukroger, "Picturability and Mathematical Ideals of Knowledge," in *The Oxford Handbook of Philosophy in Early Modern Europe,* ed. Desmond Clarke and Catherine Wilson (Oxford: Oxford University Press, 2011), pp. 338–60. See also Hans-Werner Arndt, *Methodo Scientifica Pertractatum: Mos geometricus und Kalkülbegriff in der philosophischen Theoriebildung des 17. und 18. Jahrhunderts* (Berlin: Walter de Gruyter, 1971).

31. See Gaukroger, "Picturability and Mathematical Ideals."

32. Niccolo Guicciardini, *Reading the Principia: The Debate on Newton's Mathematical Methods for Natural Philosophy from 1687 to 1736* (Cambridge: Cambridge University Press, 1999), p. 101.

to other areas of learning.[33] From the mid-seventeenth century it became popular to present a philosophical argument *more geometrico*, in quasi-mathematical terms, as a sequence of definitions, axioms, and propositions. Like Descartes, other thinkers hoped that the method of "analysis," which had appeared to yield such remarkable results in mathematics, could be transferred to philosophy. At the University of Jena the philosopher Erhard Weigel (1625–99) was one of the most influential German proponents of the new "geometric method."[34] His students included two of the most famous thinkers of the early German Enlightenment, Wolff's later patron Gottfried Wilhelm Leibniz, and the jurist, historian, and philosopher Samuel von Pufendorf (1632–94). Weigel's influence prompted Pufendorf to write his 1660 treatise on natural jurisprudence, *Two Books of the Elements of Universal Jurisprudence,*[35] in the geometric style, though he later more or less abandoned this in his better known work, *On the Law of Nature and Nations* of 1672.[36] An important figure in Christian Wolff's intellectual development, even before he became acquainted with Leibniz, was Ehrenfried Walther von Tschirnhaus (1657–1708). Tschirnhaus was a nobleman from Upper Lusatia who studied law and medicine at the University of Leiden from 1668, at a time when Cartesian philosophy was the subject of considerable controversy there.[37] In 1674 he was introduced to the circle around Spinoza, who gave Tschirnhaus a manuscript copy of his *Ethics*, *Demonstrated according to the Geometric Method*. Following travels to London, Paris, and Italy, Tschirnhaus returned to the Netherlands in 1679 and completed the manuscript of

33. See René Descartes, *A Discourse on the Method*, ed. and trans. Ian Maclean (Oxford: Oxford University Press, 2006).

34. See, for example, Weigel's *Philosophia mathematica, theologia naturalis solida*, ed. Thomas Behme (Stuttgart–Bad Cannstatt: Frommann–Holzboog, 2013).

35. Samuel Pufendorf, *Two Books of the Elements of Universal Jurisprudence*, ed. Thomas Behme (Indianapolis: Liberty Fund, 2009).

36. For a summary of Pufendorf's natural law theory, see Knud Haakonssen, "Samuel Pufendorf (1632–1694)," in *The Oxford Handbook of the History of International Law,* ed. Bardo Fassbender, Anne Peters, Simone Peter, and Daniel Högger (Oxford: Oxford University Press, 2012), pp. 1102–5.

37. Gerhard Wiesenfeldt, *Leerer Raum in Minervas Haus: Experimentelle Naturlehre an der Universität Leiden, 1675–1715* (Amsterdam: Koninklijke Nederlandse Akademie der Wetenschappen; Berlin: Verlag für Geschichte der Naturwissenschaften und Technik, 2002).

his treatise *Medicine of the Mind, or an Attempt at a Genuine Logic, in Which the Method of Finding Unknown Truths Is Discussed*,[38] in which he expressed his great admiration for the "incomparable" Descartes.[39] Wolff had heard of *Medicine of the Mind* when he was still at school, but failed to obtain a copy. He certainly read it at university, however, and in 1705 met Tschirnhaus himself to discuss *Medicine of the Mind*, an event he thought sufficiently memorable to record in his autobiography.[40]

The importance of mathematics for Wolff's philosophy is already evident from the title of his 1703 dissertation, *Universal Practical Philosophy, Written according to the Mathematical Method*. In the preface, Wolff summed up the significance of recent progress in mathematics for philosophy. Over the past century, he said, mathematics had flourished, and

> the other disciplines derived the great splendour, with which they now shine, from the fact, that their scholars now philosophize according to mathematical principles, that is, they are now used to distinguish accurately the concepts of the understanding from the perceptions of the imagination; examining first the nature of things, and deducing everything else from that; and finally progressing from universal and simple principles to more specific and complex conclusions, according to the laws of the genuine method for finding the truth.[41]

38. Ehrenfried Walther von Tschirnhaus, *Medicina mentis, sive tentamen genuinae logicae, in qua disseritur de methodo detegendi incognitas veritates* (Amsterdam, 1687). A second edition appeared in Leipzig in 1695.

39. Siegfried Wollgast, *Ehrenfried Walther von Tschirnhaus und die deutsche Frühaufklärung* (Berlin: Akademie-Verlag, 1988). Jonathan Israel, *Radical Enlightenment: Philosophy and the Making of Modernity* (Oxford: Oxford University Press, 2001), pp. 637–38. See also Jean-Paul Wurtz, "Über einige offene oder strittige die Medicina Mentis von Tschirnhaus betreffende Fragen," *Studia Leibnitiana* 20, no. 2 (1988): 190–211.

40. Wolff, *Lebensbeschreibung*, p. 125.

41. "[R]eliquae autem disciplinae splendorem, quo nunc effulgent, insignem ideo consecutae, quod earum cultores Mathematice philosophari, h.e. conceptus intellectus a perceptionibus imaginationis accurate distinguere, rerum naturas primo omnium loco investigare & ex iis reliqua deducere, tandemque ab universalibus & simplicioribus ad specialiora & magis involuta progredi juxta leges genuinae cujusdam methodi inveniendi verum sueverint." (Christian Wolff, "Philosophia practica universalis, mathematica methodo conscripta," in Wolff, *Meletemata*