

# Gottfried Wilhelm Baron Von Leibniz I

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The German polymath [Gottfried Wilhelm Leibniz](#) made significant contributions to philosophy, logic, mathematics, physics, jurisprudence, politics, the mechanical arts, and history. He worked as a diplomat, an engineer, an attorney, and a political advisor. He corresponded with queens and emperors and with the most eminent intellectuals of the age. Yet his reputation as a philosopher depends largely on texts that were unpublished at the time of his death, including some never intended for publication. Besides well-known works such as the *Discourse on Metaphysics*, *First Truths*, *New Essays*, and *Monadology*, there are thousands of pages of other texts, many of which are still unpublished. Interpreting these vast writings is a daunting task, best approached by attending closely to the historical and cultural context in which he was working and by taking into consideration as many texts as possible. Against the background of Leibniz's long, complicated life, it is possible to trace the development of his philosophical views, from his earliest essays in Leipzig in the 1660s to his last letters written in Hanover fifty years later.

The sheer volume of Leibniz's writings, combined with the fact that some are published and some are not, can sometimes make citing Leibniz seem complicated. The standard edition of his works is [Gottfried Wilhelm Leibniz: Sämtliche Schriften und Briefe](#), which was published by the Akademie Verlag in 1923. To simplify citations in this text, it is abbreviated throughout simply as "A," followed by series, volume, and page number (see "A" in the Abbreviations section of the Bibliography at the end of this essay for full publication information). When an English-language translation exists, it follows a colon at the end of the German-language information. In addition to the abbreviation for that primary work, other prominent texts on Leibniz's life and works have also been abbreviated in the in-text citations that appear throughout this essay—a list of those abbreviations and full publication information for every one of them is provided in the Abbreviations section at the very beginning of the Bibliography.

It should be noted that, in regard to Leibniz's philosophical texts, as of mid-2005, only those written up to June 1690 had been published; for texts written after that date that are referenced in this essay, the best available edition has been cited. Finally, works by Leibniz that are divided into short sections have been cited by section number instead of by page number.

## Life

Leibniz was born in the Lutheran city of Leipzig on July 1, 1646 to Friedrich Leibniz (1597–1652), professor of moral philosophy at the University of Leipzig and the son of a noblewoman and his third wife, Catharina Schmuck (1621–1664), the daughter of a celebrated jurist. An orphan, Schmuck was raised by Johann Hopner, professor of theology, as well as by Quirin Schacher, professor of law. Upon Friedrich's death in 1652, Schmuck committed herself to the education of her son and his sister, Anna Catharina (1648–1672). As a very young boy, Leibniz was given access to his father's library where by his own account he taught himself Latin and read poetry, history, theology, and some Aristotelian philosophy.

On graduating from the Nicolai School, Leibniz entered the University of Leipzig in April 1661, aged fourteen. He studied ancient languages and literature and heard lectures in mathematics (mainly Euclid) and philosophy. Although the new mechanical philosophy of René Descartes, [Thomas Hobbes](#), and [Pierre Gassendi](#) had not been embraced by the professors in Leipzig, there was a diverse intellectual culture available there. Johann Adam Scherzer (1628–1683), professor of philosophy, Hebrew, and theology, published on a wide range of topics, including Kabbalistic theology while Jakob Thomasius (1622–1684) promoted an eclectic mixture of Platonism, Aristotelianism, and other prominent historical schools. Thomasius was an unusually careful historian of philosophy, keen to distinguish between the true and false proposals of the various philosophical sects. As the father of [Christian Thomasius](#), who (with Christian Wolff) is often credited as founding the German enlightenment, Jakob Thomasius occupies an important place in the development of German philosophy. Thomasius supervised Leibniz's bachelor's thesis titled *Disputatio metaphysica de principio individui* (Metaphysical Disputation on the Principle of Individuation), which Leibniz defended and published in 1663. The thesis argues for a monadic account of substantial individuation, a position that prefigures his mature views.

Leibniz spent the summer of 1663 at the University of Jena studying under Erhard Weigel (1625–1699), professor of mathematics. Weigel was more progressive than the professors at Leipzig and included mechanical physics within his eclectic mixture, combining Euclid, Aristotle, and the *new philosophers* in an attempt to construct the true philosophy. He returned to Leipzig in October 1663 and received his bachelor of law degree in 1665 under professors Schacher and Bartholomäus Schwendendörffer. In 1666, he published *Dissertatio de arte combinatoria* (Dissertation on the Combinatorial Arts). It

contains his first thoughts on the universal characteristic and related logical issues. He planned to pursue legal studies at Leipzig but was refused admission (probably because of his age) and went instead to the University of Altdorf, near Nuremberg, where he quickly earned a doctorate. His dissertation *Disputatio de casibus perplexis in jure* (Disputation on Difficult Cases in Law, 1668) was so well written and defended that the Altdorf faculty immediately offered him a professorship.

Leibniz declined the Altdorf professorship and chose, instead, a life of public service. In Mainz, he impressed Baron Johann Christian von Boineburg (1622–1672), a pious Catholic, distinguished diplomat, and minister to the archbishop of Mainz, Elector Johann Philipp von Schönborn (1605–1673). Boineburg became Leibniz's patron and employed him as an assistant, attorney, librarian, and foreign advisor. In this last capacity, Leibniz produced a lengthy work supporting Schönborn's candidate for the Polish throne. The Catholic Boineburg encouraged the Lutheran Leibniz to pursue ecumenical and conciliatory projects, and he began a project, *Demonstrationes Catholicae* (*Catholic Demonstrations*), aimed at devising a metaphysics consistent with Catholic and Lutheran doctrines. He worked on the *Catholic Demonstrations* between 1668–1671 and returned to it in 1679. Although never completed, it contains his earliest essays on central metaphysical topics.

Besides pursuing peace in politics and religion, the young Leibniz was committed to philosophical peace. In an effort to offer a conciliatory method in philosophy, he prepared a new edition of Marius Nizolius' (1498–1576) 1553 work, *De veris principiis, et vera ratione philosophandi contra pseudophilosophos* (On true principles, and the true method of philosophizing against the false philosophers). Also, between 1669 and 1671, he composed a series of notes titled *Elementa juris naturalis* (*Elements of Natural Law*), in which he discusses theology, metaphysics, and ethics. These notes cover a wide range of topics, including divine and human justice, knowledge, and universal harmony. At this time he began a correspondence with the Duke of Brunswick Johann Friedrich (1652–1679), presenting his views about the souls or *vital* principles in nature, to which he attached important theological essays on the immortality of the soul and the resurrection of the body.

In 1671 Leibniz published two related works that constitute his first extended account of the laws of motion and their metaphysical foundations. The first, the *Hypothesis physica nova* (*New Physical Hypothesis*), subtitled *Theoria motus concreti* (*Theory of Concrete Motion*), he dedicated to the [Royal Society](#) of London; the second, the *Theoria motus abstracti* (*Theory of Abstract Motion*), he dedicated to the [French Academy](#) of Sciences. Together these works, which employ the Hobbesian notion of *conatus* along with the indivisibles of authors such as Bonaventura Cavalieri (c. 1598–1647), propose a physical system, including a creation story and laws of collision, which relies on the notion of momentary minds. Thus, by 1671 he had already begun to think of minds as the only source of motion and activity in the world; minds in nonhuman substances are momentary while human minds persist and have memory. This attempt to combine an original account of mind with a Hobbesian notion of *conatus* reveals his conciliatory tendencies as well as his capacity to engage in contemporary discussions in physics.

In 1671 Leibniz and Boineburg devised an elaborate plan to divert a pending European war. With secret papers in hand, Leibniz traveled to Paris in March 1672 to meet with a representative of King [Louis XIV](#) but arrived too late. Despite this failed diplomatic undertaking, he remained in Paris, at first to promote other political plans of his mentor and then, upon Boineburg's sudden death at the end of 1672, to pursue philosophical peace. He stayed in Paris until 1676 and struggled to stay longer, arguing that the pursuit of science in the service of humanity could be better achieved there than in Hanover, where the Duke of Brunswick had recently employed him.

Leibniz's four years in Paris were enormously productive. In the fall of 1672, he met the Dutch mathematician [Christiaan Huygens](#) (1629–1695) who immediately recognized the young man's talent and guided his mathematical studies. Although his education had not acquainted him with recent developments in mathematics, he devoted himself to study and by the fall of 1675 had laid the foundations of his calculus. During his lifetime he suffered from accusations that he had stolen the insights that led to his discovery of the differential and [integral calculus](#) from Isaac Newton. But twentieth-century historians of science exonerated him from these charges, showing that he arrived at the calculus independently of Newton.

In early 1673 Leibniz traveled briefly to England on a political mission and met mathematicians and natural philosophers, including [Robert Hooke](#) (1635–1703), [Robert Boyle](#), and [Henry Oldenburg](#) (1619–1677), secretary of the [Royal Society](#). Back in Paris, he finished a lengthy dialogue, *Confessio Philosophi* (*Philosopher's Confession*), in which he discusses the problem of evil, a topic that would engage him until his death. He also wrote an essay "De vera methodo philosophiae et theologiae ac de natura corporis" ("On the True Method in Philosophy and Theology and on the Nature of Body," in which he restates his fundamental methodological concerns and insists that neither mechanical physics nor mathematics speaks directly to what is most important, namely, the good of the soul and the truths of theology. In 1675 he designed and demonstrated a calculating machine and befriended the young mathematician Ehrenfried Walther von Tschirnhaus, who introduced him to the philosophy of Benedict (Baruch) de Spinoza. At the same time he began work on a group of notes, given the title *De Summa Rerum* (*On the Greatest of Things*), in which he discusses a diverse group of theological and metaphysical topics.

Partly due to prejudices against his religion and nationality, Leibniz failed to attain appropriate employment in Paris, and in 1676 he reluctantly accepted an offer from Johann Friedrich to serve as librarian and adviser at the court of Hanover. In October he traveled from Paris to London and Holland before proceeding to Hanover where he took up residency in December. During his journey he composed a dialogue, *Pacidius Philalethi Prima de Motu Philosophia* (Pacidius to Philalethes: A First Philosophy of Motion), which concerns the problem of the continuum and offers an account of motion. In London he met with Oldenburg again and also [John Collins](#) (1624–1683), mathematician and librarian of the Royal Society, who showed him some

of Newton's papers. In Holland he met with prominent Dutch mathematicians and scientists, including the microscopists [Jan Swammerdam](#) (1637–1680) and [Antoni van Leeuwenhoek](#) (1632–1723). He talked at length with Spinoza and possibly saw a draft of Spinoza's *Ethics*

Settled in Hanover Leibniz continued to work in logic, metaphysics, theology, and mathematics. He met visiting scholars and theologians (including [Nicolaus Steno](#) [1631–1686]) and wrote a dialogue on [free will](#), *Dialogue entre Poliandre and Théophile*. He took notes on Spinoza's *Ethics*, then newly published, corresponded with [Nicolas Malebranche](#) on metaphysics, and returned to the *Catholic Demonstrations* and his work on the universal characteristic. He studied chemistry and made detailed proposals to Johann Friedrich about administrative matters, including the expansion of mining in the Harz mountains. Besides technical tasks involved with the mines, he was much occupied in 1678–1679 with logical topics. He composed a series of highly original notes, given the title *Calculus Universalis (Universal Calculus)*, in which he tries to formulate a logical calculus. Underlying this work is again his interest in methodology as a means of leading people to the truth and thereby effecting peace. Inspired by the multivolume *Encyclopedia* by Johann Heinrich Alsted (1588–1638), he planned his own encyclopedia project. Also during this time he made a breakthrough in his work on dynamics, defending the notion of force as against the Cartesian principle of conserved motion.

The sudden death of Johann Friedrich and the succession of his brother, Ernst August (1629–1698), in 1680, marked the end of this period of intense productivity. Leibniz remained on good terms with the duke and developed a close friendship with the duke's wife, Sophie, Duchess of Brunswick (1613–1714), with whom he corresponded on political, theological, and philosophical topics. The new duke, who would later become elector, encouraged Leibniz's technical and political schemes but was less receptive to academic matters and left the philosopher much less time to develop his own projects. Leibniz was assigned the burdensome task of compiling a history of the House of Brunswick, with the aim of establishing descent from the wealthy Italian house of Este. This project occupied him until his death (by which time, for all his efforts, he had only reached the year 1005).

Between 1680 and 1686 Leibniz worked primarily on logic and on the Harz mining project designing windmills and other equipment. When Leipzig professor Otto Mencke (1644–1707) began publishing a scholarly journal the *Acta Eruditorum*, with the aim of introducing new ideas to German scholars, Leibniz applauded the project and became a frequent contributor on scientific topics. During this time he began another attempt to formulate a logical calculus and renewed his work on the reconciliation of Protestantism and Catholicism. In that context he began a correspondence with Landgrave Ernst von Hessen-Rheinfels (1623–1699), a Catholic eager to promote religious peace.

Caught in a snowstorm for a few days in the Harz mountains in early 1686, Leibniz took advantage of the free time to compose one of his most famous works, the *Discours de métaphysique (Discourse on Metaphysics)*. It represents his first attempt to summarize the main ideas of his philosophy. He asked Landgrave Ernst to send a synopsis to [Antoine Arnauld](#), and thus began one of the most interesting philosophical correspondences of the seventeenth, or any other, century. Arnauld's criticisms forced Leibniz to explain and expand upon some of his most fundamental ideas.

Leibniz was disappointed when the duke abandoned the Harz mining project but immediately began planning a trip to research the history of the House of Brunswick. In October 1687 he set out on an extended tour of the southern German states, Austria, and Italy. His official duty was to research family history; his personal desire, encouraged by Landgrave Ernst, was to promote religious and political peace. He visited public archives and personal libraries and talked with politicians, monks, and cardinals. During his residence in Vienna, he met the Austrian emperor, to whom he recommended, among other things, the reorganization of the economy, the formation of a general research library, and the establishment of an insurance fund; he worked on proposals for an Imperial College of History; for reforming the coinage of Austria, Brunswick, and Saxony; and for lighting the streets of the city. And he wrote an important paper on motion later published in the *Acta Eruditorum*.

Leibniz spent a year in Italy traveling as far south as Naples and meeting with prominent intellectuals along the way. In Rome (April–November 1689), he made contact with leading Italian scientists, Jesuits (including Claudio Grimaldi [1638–1712], who had lived in China and with whom Leibniz corresponded), and Jansenists. Visits to the Physical-Mathematical Academy led to a treatise on dynamics, *Dynamica de potentia et legibus naturae corporeae* (Dynamics: Concerning the force and laws of natural bodies), which has two parts, one on abstract and the other on concrete dynamics. In Modena he arranged a marriage between the House of Modena and one of Duke Friedrich's daughters. In Venice he met the scientist and Jesuit Michel Angelo Fardella (1650–1708), with whom he later corresponded on philosophical topics.

Before leaving Italy Leibniz wrote a long (last) letter to Arnauld in which he develops further details of his metaphysics. At about the same time, he composed one of his most well-known texts, *Primae Veritates (First Truths)*. Written on Italian paper, the paper (given the title *Principia Logico-Metaphysica* by the academy editors) dates from the time during—or soon after—his trip to Italy. The four-page essay is a neat summary of his most fundamental philosophical principles, which are outlined in a form interestingly different from previous presentations. Leaving Venice in March 1690, he traveled through Vienna, Prague, Leipzig, and other cities before returning to Hanover. In Vienna he wrote an important paper on motion and gravity titled *De causa gravitatis, et defensio sententiae auctoris de veris naturae legibus contra cartesianos* (On the cause of gravity), which was published in the *Acta Eruditorum* in May. When he arrived back in June 1690, he had been away for more than two and a half years.

Upon his return Leibniz felt the need to justify his lengthy and relatively expensive trip and so committed a good deal of time to his history of the House of Brunswick. In 1690 he became director of the ducal library in Wolfenbüttel, a position that he held for the rest of his life. During the early 1690s he maintained his close relationship with Sophie, by this time Electress of Hanover, published often (especially on mathematical and dynamical topics) in the German *Acta Eruditorum* and the French *Journal des Sçavans*, continued old correspondences, and began new ones (for example, with Johann Bernoulli [1667–1748]). His relations with members of the Royal Society, which had never been unproblematic, took an unfortunate turn when he was accused of using Newton's work as the basis for his own calculus. In March 1693 he wrote directly to Newton about the topic.

In the 1690s Leibniz exchanged several letters with Paul Pellisson-Fontanier (1624–1693), which were then shared with interested parties, including Sophie and her Catholic sister, Marie de Brinon. These letters addressed differences between Catholic and Protestant theology and the possibility of unification among the churches. The well-known physician, Kabbalist, and Quaker sympathizer, Francis Mercury van Helmont (1614–1698) visited Hanover and spent several days lecturing Leibniz and Sophie about his views. Becoming more and more fascinated with reports from Jesuits in China about the science and mathematics of that culture, Leibniz published *Novissima Sinica* (Latest news from China) in 1697, which is an edition of letters and reports from the Jesuit's mission there. For Leibniz the reports from China supported his assumption that there is an underlying truth that all people seek and that could be glimpsed, regardless of religion.

At each stage of his life, Leibniz worked on many diverse projects and wrote thousands of notes on philosophy, mathematics, science, and theology. As an intellect he was in constant motion. It is therefore striking that he published so little. After the texts of 1670–1671, he did not publish a general account of his views until 1695 when his *Système nouveau de la nature et des la communication de substances, aussi bien que de l'union qu'il y a entre l'âme et le corps* (New system of nature), a relatively brief account of a part of his metaphysics, appeared in the French *Journal des Savants*. This led to discussions with prominent Cartesians and others, including Simon Foucher and Basnage de Beauval (1692–1708).

In 1695 Leibniz was promoted to privy counselor of justice, a high-ranking position at court. However, he was not entirely content, complaining that he had little time for new ideas and projects and that, apart from Electress Sophie, there was no one with whom he could discuss intellectual matters. Ernst August died in early 1698 and was succeeded by his eldest son, Georg Ludwig (1660–1727) (later [George I](#) of England). Georg Ludwig had little patience either for Leibniz's slow progress on the history of the House of Brunswick or for his other *invisible* projects, and Leibniz received less financial support and freedom of movement. But his friendship with Sophie continued, and his relations with her daughter, Sophie Charlotte, Electress of Brandenburg (and soon to be Queen of Prussia) also became close. Sophie Charlotte often asked Leibniz to act on her behalf, and she supported him in his successful attempt to set up the Berlin Society of Sciences in 1700. As founding president, he wrote its charter.

At this point Leibniz was ready to publish further details of his system of *preestablished harmony*. One of the most important accounts, *De Ipsa Natura* (On Nature Itself), appeared in *Acta Eruditorum* in 1698 and contains his first use of the term *monad*. These publications led to important intellectual exchanges with [Pierre Bayle](#), Burchard de Volder (1643–1709), Lady Damaris Masham (1658–1708), Bernoulli, Bernard le Bovier de Fontenelle, Bartholomew des Bosses (1668–1728), Wolff (who became a kind of disciple), and others.

In the final years of the seventeenth century, Leibniz engaged again in controversy over the invention of the calculus. He was also drawn into secret diplomacy with the English court over the royal succession. Sophie Charlotte and he frequently conversed and exchanged letters about political and philosophical matters. After her sudden death in 1705, he wrote a memorial on topics they had discussed, which subsequently became his *Essais de Théodicée* (*Theodicy*), dedicated to her. Published in 1710, the *Theodicy* is the longest and most prominent publication of his life. In it he attempts to reconcile the goodness of God, the freedom of human kind, and the origin of evil. Its central claim, that this is the best of all possible worlds, was subsequently ridiculed by François-Marie Arouet de Voltaire in *Candide*.

By 1705 Georg Ludwig had lost all patience with Leibniz and forbade him to leave Hanover without permission until the history of the House of Brunswick was complete. Besides visits to nearby Wolfenbüttel, he spent much of his time over the next few years on the history and political relations among the courts in England, Hanover, and Brandenburg. But despite these duties, he began a study of [John Locke](#)'s *Essay concerning Human Understanding* and wrote essays, some of which he published, on philosophy. As a result of his critical respect for Locke, he composed a lengthy dialogue between a Lockean and a Leibnizian but chose not to publish this text, *Nouveaux essais sur l'entendement humain* (New Essays on Human Understanding) because Locke died in 1704, around the time the work was finished.

In his last years Leibniz continued as librarian of Wolfenbüttel, political adviser, and historian. In 1711 he met Russian Czar Peter the Great (1672–1725) who wanted to engage him on legal and scientific matters. In 1713 Leibniz traveled to Vienna where the Austrian emperor appointed him imperial privy counselor and agreed to create a Society of Sciences. From Vienna he counseled friends in Hanover and Wolfenbüttel though dislike for him at court had increased. When Georg Ludwig became King [George I](#) of England in 1714, Leibniz returned to Hanover in hopes of seeing his employer. They missed one another, but the king left instructions insisting that the history of the House of Brunswick be finished. Despite these pressures and encroaching ill health, he began new correspondences—with Nicolas Remond in Paris and [Samuel Clarke](#), an English Newtonian. He also wrote *Principes de la nature et de la grace, fondés en raison* (The Principles of nature and grace, based on reason); the *Discours sur la théologie naturelle des Chinois* (Discourse on the natural theology of the Chinese), in which he

shows the connections between Chinese thought and his own *true* philosophy; and the *Monadology*, perhaps his most famous work, providing a summary of the basic tenets of his later philosophy.

Leibniz suffered from gout and by 1714 was severely affected. In the last months of his life, he developed sores on his right leg. Distrusting physicians he refused to see a doctor when he suffered an attack of kidney stones. Working constantly he died in bed on 14 November 1716. By this time he was so out of favor with the court that only a handful of people attended his funeral. Because few of his works were published during his lifetime, it was only in the later part of the eighteenth-century that the extent of his genius began to be understood and acknowledged. It would be left to twentieth-century scholars to uncover the extraordinary breadth of his contributions in physics, mathematics, logic, theology, and philosophy.

## Philosophical Corpus

Among the writings of great early modern thinkers, Leibniz's are unusually problematic. Descartes, Galileo, Spinoza, Hobbes, Malebranche all produced brilliant explications of their philosophies. But there is no single exposition of Leibniz's metaphysics replete with extended arguments and details. He published little during his lifetime and no published text (e.g., *A New System of Nature*, the *Theodicy*) provides a thorough-going account of his philosophy. Although there are a number of identifiable *main* texts, it remains unclear how to treat them since they differ noticeably from each other and were written over many years.

Leibniz wrote more pages—in Latin, French, and German—than most scholars can read in a lifetime. Stored in Hanover after his death, his papers were unorganized, unedited, and undated. The main part of his philosophical corpus has not been available in a standard edition. The early editions of his philosophical work—a late eighteenth-century edition by L. Dutens and a late nineteenth-century collection by C. I. Gerhardt—are incomplete and sometimes inaccurate. The Prussian Academy of Science (now the German Academy of Science) began to publish the standard edition of his papers in 1923, but it has taken decades to cover even the main works in philosophy. The publication of the remainder is expected to take until 2050. It is surely difficult to acquire a broad understanding of his writings when only a small selection is available.

Leibniz's philosophical writings pose additional problems. First, many of them are hastily written personal notes, often both incomplete and undated. As he himself wrote about his papers: "Instead of treasure ... you will only find ashes; instead of elaborate works, a few sheets of paper and some poorly expressed vestiges of hasty reflections, which were only saved for the sake of my memory" (A VI i 533). Second, even in the publications and letters sent to the great philosophers of Europe, he had specific methodological reasons for not being forthright about his views: His goal was to avoid preaching in an attempt to engage his reader. By such means he hoped to nudge the wayward soul toward the truth. In a frank moment in 1676 he writes: "A metaphysics should be written with accurate definitions and demonstrations, but nothing should be demonstrated in it apart from that which does not clash too much with received opinions. For in that way this metaphysics can be accepted; and once it has been approved then, if people examine it more deeply later, they themselves will draw the necessary consequences" (A VI iii 573–574: Pk 93). Finally, given his astonishing erudition, it is difficult to reconstruct the conceptual framework of his writings. Not only did he use major parts of the history of philosophy without citation or explanation, he thought that it was a *good thing* to combine ideas taken from the great philosophical systems. One of the main reasons that it is so difficult for us to recognize the borrowed doctrines and transformed assumptions in his writings is that he made such abundant use of the entire history of philosophy as it was conceived in the seventeenth century.

Due to the difficulties posed by Leibniz's writings, texts such as the *Discourse on Metaphysics*, *First Truths*, *New System*, *New Essays*, and *Monadology*—all of which suited twentieth-century philosophical tastes—became his canonical writings. As important as these writings are, they do not represent the extraordinary range and quirky diversity of his ideas. He is rarely explicit about the precise relations among his ideas, but he is clear about the fact that they are tightly connected. At the end of his life, he insists: "My principles are such that they can hardly be torn apart ... whoever knows one well knows them all" (G II 412: L 599).

In an attempt to reveal the breadth of Leibniz's philosophical system and the connections among core doctrines, this article cites a diverse group of texts selected from all the main periods of his life. He borrowed ideas from the whole history of philosophy, and so before considering some of his philosophical ideas, we will situate them in their proper historical context.

## Methodology and Intellectual Harmony

The early Renaissance philosopher [Giovanni Pico della Mirandola](#), formulates in his *On the Dignity of Man* (1486) one of the defining statements of the conciliatory methodology of many humanist thinkers. Pico recommends that the seeker of truth study all the masters of philosophy. Once the truths in each philosophical tradition are discovered, they will be combined into a comprehensive philosophy. One of the main points of Pico's project is to show that a *concord* can be forged between the philosophies of Plato and Aristotle. For intellectual conciliators such as Pico, the doctrines of the prominent philosophical traditions, despite their apparent differences, can be made to form a coherent philosophical system.

In the aftermath of the [Thirty Years War](#), whose battles were fought mostly on German soil, this methodology of peace was extremely attractive, especially to German thinkers, many of whom had witnessed the devastation and horrors of the war firsthand. As a young man Leibniz committed himself to his own form of conciliatory eclecticism. Like Pico he thought that

the fundamental truths were (mostly) those offered by the illustrious ancient thinkers. Some of his basic metaphysical beliefs were taken directly from the Aristotelian, Platonist, and mechanical philosophies: that a substance is something wholly self-sufficient, that each creature is an emanation of God's essence, and that all corporeal features are to be explained mechanically. But he also went beyond Pico in his commitment to a philosophy that is consistent with specific Christian doctrines, such as those of the Eucharist and the resurrection of the body. His grand philosophical system is the result of the clever interweaving of ancient and modern assumptions.

In 1671 Leibniz published an edition of a text by the sixteenth-century humanist Mario Nizolio (1488–1567). He wrote a lengthy introduction to Nizolio's 1553 book *On the True Principles and the True Method of Philosophy, Against the Pseudo-philosophers*. Both Nizolio's text and Leibniz's introduction discuss the proper way of philosophizing. It is significant that Leibniz attached to his introduction a slightly revised version of his April 1669 letter to Jakob Thomasius. The letter thereby became the young man's first published text on a contemporary metaphysical topic. Instead of being yet another philosopher "lusting for novelty," Leibniz seeks to find the "interconnections among doctrines" (A VI ii 426). He presents what he calls a "reformed philosophy," a philosophy that combines the "rule" of the new mechanical physics and the metaphysics of Aristotle (A VI II 434: L 94). He focuses on corporeal substances and reforms Aristotle's notions of substantial form and matter so that they accommodate the mechanical physics. By demoting the mechanical notion of matter as extended stuff to Aristotelian prime matter, he cleverly constructs a theory of substance that has the structure of the Aristotelian notion and yet is consistent with mechanical explanations in physics. He happily concludes that by such means, the mechanical philosophy "can be reconciled with Aristotle's" (A VI ii 435: L 95). The details of his views about substance would change over the years, but the basic structure of this theory of substance, developed as a synthesis of Aristotelianism and mechanism, would remain the same.

In his *New Essays*, written in response to Locke in the early years of the eighteenth century, Leibniz reflects on the methodology that produced his philosophy: "This system appears to unite Plato with Democritus, Aristotle with Descartes, the scholastics with the moderns, theology and morality with reason. It seems to take the best from all quarters and then goes further than anyone has done before" (A VI vi 71–73). His concern with intellectual harmony emerges also in his concern to engage his readers and interlocutors so as to enlist them in his march toward truth. In a letter of March 1678, he explains:

I am concerned, as are all who wish to hold a middle ground, not to seem too much inclined toward either of the two opposed adversaries. Whenever I discuss matters with the Cartesians ... I extol Aristotle where he deserves it and undertake a defense of the ancient philosophy, because I see that many Cartesians read their one master only ... and thus unwisely impose limits on their own ability. ... I think that the two philosophies should be combined and that where the old leaves off, the new should begin." (A II i 402: L 190)

For Leibniz the true metaphysics will be consistent with Christian doctrine and constructed from the underlying truths in the great philosophical systems. An underappreciated aspect of his brilliance is his ability to gather ideas from different philosophical sources and make them his own.

## God and Creation

Like other prominent thinkers of the seventeenth century, Leibniz believed in a perfectly good Supreme Being who created and maintained the world and whose existence could be proven. He sometimes employed versions of the cosmological argument for God's existence. For example, in the *Monadology* (1714), he argues for God a posteriori based on the harmonized diversity of the world and the fact that there are contingent beings whose "final or sufficient reason" must be in a "necessary being" (§39, §45). But his favorite argument is an original version of the ontological argument, which is critical of Descartes's version and based on the mere possibility of God: "Since nothing can prevent the possibility of what is without limits, without negation, and consequently without contradiction, this by itself is sufficient for us to know the existence of God a priori" (§45).

Like many of his contemporaries, Leibniz owed a number of his assumptions about God as creator of the world to an ancient (mostly Platonist) tradition. From prominent professors at the University of Leipzig, he acquired a solid education in Platonism. The version of this ancient philosophical "sect" taught in Leipzig was one inspired by the third-century Platonist, Plotinus (c. 204–270) and by Jewish Kabbalism. Many of his most fundamental assumptions about knowledge, mind, plenitude, the nature of creation, and the relations among substances are rooted in this tradition. Two assumptions that he embraced as a young man are as follows:

### god and emanation

There is an ultimately good, perfectly self-sufficient, and thoroughly unified Supreme Being on which everything else depends and which itself depends on nothing. God's mind contains a number of Ideas or attributes (say, the Idea of Justice), which are the perfect essences of things (these are roughly based on Plato's theory of Ideas) and which are used as models for created things. The Idea or attribute of God is emanated to a creature in such a way that neither God nor God's attribute is depleted in any way while the creature acquires the attribute, though in an inferior manner. The emanative process is continual so that a creature instantiates a divine attribute if and only if God emanates the attribute to the creature. For many Platonists, a corollary of this causal theory of emanation is that every product of the Supreme Being contains all the attributes (and hence the essence) of God though the product instantiates each of those attributes in a manner inferior to the way in which they exist in the Supreme Being. Justice as conceived by God is perfect; justice as instantiated by Socrates is not. Leibniz summarizes the

position in §14 of the *Discourse on Metaphysics* : "It is evident that created substances depend upon God, who preserves them and who even produces them continually by a kind of emanation."

## plenitude and sympathy

The divine essence is emanated not just to each creature but to the whole of creation. The principle of plenitude develops from the idea that the more of the divine essence in the world—and hence of being and goodness—the better. Although the principle of plenitude suggests that there will be as much diverse being as possible (the more being, the better the world), this diversity of being must also be properly unified (the more unity, the better the world). One of the results of this unity among the parts of the world is a cosmic sympathy. Here the idea is that each part of the world is *in sympathy* with all the others. In other words, the principle of plenitude was supposed to imply that God fills creation with as much being as possible and unifies those diverse beings as much as possible. Such a diverse and unified world was supposed to engender wonder, delight, and awe in human observers. In the *Monadology*, he agrees with the ancient philosopher Hippocrates who claimed that all things are in sympathy with one another: everything "is affected by anything that happens in the universe, to such an extent that he who sees all can read in each thing what happens everywhere, and even what has happened or what will happen, by observing in the present what is remote in time as well as in space" (§61).

These ancient Platonist assumptions about emanation, plenitude, and sympathy inform much of Leibniz's thinking about the world. They inspire his theory of universal harmony, many of his views about mind, his account of knowledge, his solution to the problem of evil, and his views about the mirroring and expressing of substance. In this section, we consider the core doctrines closely related to these Platonist assumptions. As we will see, Leibniz remains committed to these doctrines throughout his philosophical career.

## universal harmony

Leibniz first articulates the doctrine of universal harmony in a series of notes titled *Elements of Natural Law*, written between 1668 and 1671. As he summarizes the idea for Arnauld in 1671: "I define ... harmony as diversity compensated by identity" (A II i 173–174: L 150). By the time he wrote the *Discourse on Metaphysics* in 1686, he had come to formulate the doctrine in terms of hypotheses though the underlying idea is still the same. In §6 of the *Discourse*, he explains: "God has chosen the most perfect world, that is, the one which is at the same time the simplest in hypotheses and the richest in phenomena." According to Leibniz, the single, unified, and perfect Supreme Being freely chooses to emanate the divine attributes to creatures; God remains transcendent while all creatures become an imperfect instantiation of God's attributes. Because God emanates the divine essence to all its products, he describes God as the reason (*ratio*) of the world and the one (*unum*) in it.

Universal harmony entails that God relates to the world and to each creature in it in two ways. God is the multiplicity in the world insofar as the divine essence is variously manifested in the vast diversity of creatures and in the diversity of the perceptions of each creature, but God is also the unity insofar as each created thing is a unified instantiation of the divine essence (although a manifestation of the essence far inferior to that of God) and therefore related to and reflective of all the others. The world is full of various perceptions of the world or *phenomena* because the world contains an infinity of different expressions of the divine essence. Leibniz's notion of universal harmony forms the basis for his mature theory of pre-established harmony.

## plenitude, difference, and principle of the identity of indiscernibles

From 1676 on Leibniz is increasingly explicit about the significance of the principle of plenitude. In a series of notes written in Paris titled *On the Greatest of Things*, he writes: "I take as a principle ... that the greatest amount of essence that can exist does exist" (A VI iii 472: Pk 21). He never wavers from this commitment to plenitude. In *On the Ultimate Origination of Things* of 1697, he explains that God is the *reason*, or source, of things and argues that "there is a certain urge for existence or (so to speak) a straining toward existence in possible things or in the possibility of essence itself; in a word essence in and of itself strives for existence" (G VIII 303: AG 150). For Leibniz, the world is not just very full, it is as full of being as it can possibly be, consistent with harmony. As for his contemporaries Spinoza and Anne Conway, infinity is for Leibniz a mark of the fullness of being. Whereas Spinoza assigns God or nature an infinity of attributes, both Conway and Leibniz make each portion of the world infinitely full. In 1676 he claims that every part of the world, regardless of how small, "contains an infinity of creatures," which is itself a kind of "world" (A VI iii 474: Pk 25). He emphasizes the same point later in *First Truths* (1689): "Every particle of the universe contains a world of an infinity of creatures" (VI iv [B] 1647–1648: AG 34). For Leibniz there is an aesthetic aspect to this elaborate harmony among the infinity of creatures. As he puts the point in the *Monadology* :

the author of nature has been able to practice this divine and infinitely marvelous art, because each portion of matter is not only divisible to infinity, as the ancients have recognized, but is also actually subdivided without end, each part divided into parts ...; otherwise, it would be impossible for each portion of matter to express the whole universe" (§65).

Nor is Leibniz content merely to fill the world with being. He argues that in order to contribute to the world's diversity, each created thing must be essentially distinct from every other. One of his most famous principles, the principle of the identity of indiscernibles, demands that no two substances are exactly alike. He writes in *Discourse* : "It is not true that two substances can resemble each other completely and differ only in number" (§9). Although he is not explicit about the importance of the

principle until the late 1680s and then formulates it in a variety of ways, the basic idea is straightforward enough: There is always more than a mere numerical difference between substances. Two eggs might seem perfectly similar but they will not differ merely numerically; there will always be something true of one egg that is not true of the other. In *First Truths* he argues: "In nature, there cannot be two individual things that differ in number alone. For it certainly must be possible to explain why they are different, and that explanation must derive from some difference they contain" (A VI iv [B] 1645: AG 32). As he puts it in the *Monadology*: "It is also necessary that each monad be different from each other. For there are never two beings in nature that are perfectly alike, two beings in which it is not possible to discover an internal difference" (§9).

What the principle of the identity of indiscernibles claims is fairly clear; why he wanted to make such a claim is less so. His commitment to the principle of plenitude and theory of emanation offers insight into his underlying motivation. For Leibniz, as for many theists, the goodness of the world is a function of the diversity of beings as well as the order among them. Given that each creature contains the divine essence, the world will be better if it is as full of diverse emanations of the divine nature as is consistent with unity and harmony. His principle of the identity of indiscernibles pushes this intuition to its logical extreme: By demanding that no two substances (that is, no two emanations of the divine essence) be the same, he thereby increases the amount of diversity in the world. The principle of the identity of indiscernibles is a neat way of insisting on difference of the required sort.

## mirrors and expressions

The image of the mind as a mirror is a permanent fixture of Leibniz's mature thought. He first develops this idea in the *Elements of Natural Law* (1668–1671). Consider the following passage: "Since every mind is like a mirror, there will be one mirror in our mind, another in other minds. Thus, if there are many mirrors, that is, many minds recognizing our goods, there will be a greater light, the mirrors blending the light not only in the [individual] eye but also among each other. The gathered splendor produces glory" (A VI i 464: L 137). By such means, he goes beyond the plenitude and sympathy of his Platonist predecessors. He does not just maximize creatures and the assumed sympathetic relations among them, he heightens their connections by making each substance a mirror of all the others because each mind is (unconsciously) aware of all the others.

In the notes written in Paris in 1676, he develops his growing commitment to plenitude in a number of directions. For Leibniz, in *On the Greatest of Things*, each mind eternally mirrors the entirety of the world, and each does so from its own perspective. That is, consistent with the principle of the identity of indiscernibles, no two substances mirror the world from the same perspective. To elucidate his point he offers an analogy that he will use for the rest of his philosophical career: In the same way that travelers approaching a town from different directions see the town from different perspectives, so each mind approaches the world from a different perspective. For Leibniz it is important that each mind has a unique view of the world for "in this way a wonderful variety arises" (A VI iii 524: Pk 85). As he summarizes the point in *On the Greatest of Things* in 1676: "A most perfect being is one that contains the most. Such a being is capable of ideas and thoughts, for this multiplies the varieties of things, like a mirror" (A VI iii 475: Pk 29).

Forty years later Leibniz sets out the same claims, employing the same analogies, in the *Monadology*: "This interconnection or accommodation of all created things to each other, and each to all the others, brings it about that each simple substance has relations that express all the others, and consequently, that each simple substance is a perpetual, living mirror of the universe" (§56).

Just as the same city viewed from different directions appears entirely different and, as it were, multiplied perspectively, in just the same way it happens that, because of the infinite multitude of simple substances, there are, as it were, just as many different universes, which are, nevertheless, only perspectives on a single one, corresponding to the different points of view of each monad. ... And this is the way of obtaining as much variety as possible, but with the greatest order possible, that is, it is the way of obtaining as much perfection as possible. (§57–58)

As these quotations suggest, there are close connections between the mirroring activity of minds and Leibniz's mature doctrine of expression. In various texts and in various ways, he claims that each substance expresses God, each substance expresses the world, and each substance expresses every other substance. After years of analysis of the texts, scholars have remained unclear about the implications and interconnections of these claims and about how exactly the doctrine of expression relates to the idea of minds as mirrors. The 1676 Paris notes, *On the Greatest of Things*, help solve some of the most recalcitrant problems by revealing the underlying motivation behind the doctrine. Each substance is an emanation of God's essence, and in this sense each shares the same essence. Each emanation will differ from every other by *expressing* the divine essence differently: "The essence of all things is the same," and they differ "only in the manner of their expression" (A VI iii 573: Pk 95). To explain his point he compares the essence of God to a number that can be expressed in an infinity of ways, each of which is a more or less clear expression of the essence. For the number 6, whether the expression is  $3+3$ ,  $3\times 2$ , or  $4+2$ , each is an expression of the same thing although "no one can doubt that the one expression differs from the other" (A VI iii 518: Pk 77). In the same way that the number 6 may be thought to contain its full essence, so God contains perfectly the divine essence. Whether the expression of 6 is  $2+4$ ,  $3\times 2$ ,  $36-32+2$ , or any of the other infinite means of expressing it, each is a more or less clear expression of the same thing. Similarly, each substance—whether a human, roach, or chimpanzee—is a more or less clear expression of the divine essence. Leibniz concludes: "So do things differ from each other and from God" (A VI iii 519: Pk 77).

The arithmetical analogy makes it easier to see how expression works. Each substance expresses God insofar as it expresses the divine essence; each expresses the world insofar as the world just is the totality of expressions of God; and finally, each

substance expresses every other insofar as each is a more or less clear expression of the same thing. The *Discourse on Metaphysics* employs expression to great effect: "Every substance is like a complete world and like a mirror of God or of the whole universe, which each one expresses in its own way, somewhat as the same city is variously represented depending upon the different positions from which it is viewed" (§9). He goes on to add that substances are "different expressions of the same universal cause, namely, God," where "the expressions vary in perfection" (§15).

Nor should we worry that creatures have become "little Gods." Although in the *Monadology* Leibniz is happy to describe human minds as "images of the divinity itself" (§83), he always distinguishes between the perfection of God and the limitations of creatures. In the *Monadology*, he insists that "what is limited in us is limitless" in God (§30), and argues: "God alone is the primitive unity or the first simple substance; all created or derivative monads are products, and are generated, so to speak, by continual fulgurations of the divinity from moment to moment, limited by the receptivity of the creature, to which it is essential to be limited" (§47).

## God, Mind, and Knowledge

The Platonism of Leibniz's professors bequeathed to him central concerns relating to mind. In the *Phaedo* Plato argues that it is "the divine-like" nature of the soul that guarantees its self-sufficiency, vitality, and unity. Because the soul remains "always the same as itself," it is immortal. The body, because it is never the "same as itself," is mortal (80a–e). Subsequent Platonists had to explain how the soul and the body could be causally related. Among the explanatory alternatives, the fifteenth-century Platonist [Marsilio Ficino](#) offered a version of one that influenced Leibniz strongly. In his *Platonic Theology*, Ficino uses the causal theory of emanation to bind the body to the soul. According to Ficino, the soul, which is "always alive," emanates its "vivifying" and "indivisible power" to its body so that it "causes life to be diffused" and thereby creates a harmony of components. As the unifying power of God is to the world, so is the soul to the body (Book II, chapter 3).

Besides a Platonist account of the soul and its relation to the body, the young Leibniz also took up a Platonist epistemology according to which the only true objects of knowledge (as opposed to opinion) are the eternal and immutable Ideas. Many Platonists placed the Ideas within the soul, where they remain, waiting to become objects of conscious thought. Although Platonists differed about the precise role played by the senses in the acquisition of knowledge, most agreed that the process of coming to know the Ideas was one of removing oneself from the mutable world of the senses and letting one's understanding (*intellectus*) grasp the immutable Ideas within. For some Platonists cosmic sympathy aids in this pursuit of knowledge; the same Ideas that are implanted in souls are also evident in the harmony among creatures in the world. Theists often reinterpreted Plato's realm of Ideas as the mind of God and the Ideas as paradigms employed by God in creation. Acquisition of knowledge of these Ideas is a necessary step toward knowledge of God, to be achieved both by turning away from the world to the immutable ideas within and by attending to the connections among all things.

In some notes written during his stay in Venice in 1690, Leibniz summarizes this Platonist stance: "Each thing is so connected to the whole universe, and one mode of each thing contains such order and consideration with respect to the individual modes of other things, that in any given thing, indeed in each and every mode of any given thing, God clearly and distinctly sees the universe as implied and inscribed." Due to this connection among things:

"when I perceive one thing or one mode of a thing, I always perceive the whole universe confusedly; and the more perfectly I perceive one thing, the better I come to know many properties of other things from it. And from this perfect consonance of things there also arises the greatest harmony and beauty of the universe, which exhibits to us the power and wisdom of the Highest Maker." (AG 103)

### mind and activity

From the beginning of his philosophical career, Leibniz associates activity with mind. Whether he calls these principles of activity souls, minds, substantial forms, or monads, the idea is always that the only sources of activity in the world are divine-like principles that have the power to generate unity, self-sufficiency, and vitality. In a note of 1671, he argues: "Just as God thinks things ... because they follow from his nature, so does Mind. ... Mind and God do not differ except that one is finite and the other infinite" (A VI ii 287–288). In the *Monadology*, he notes: "that souls, in general, are living mirrors or images of the universe of creatures, but that minds are also images of the divinity itself, or of the author of nature, capable of knowing the system of the universe ... each mind being like a little divinity in its own realm" (§83).

For a short period in 1670–1671, Leibniz distinguished between the momentary minds in nature and conscious minds. His published treatises the *New Physical Hypothesis* and *Theory of Abstract Motion* of 1671 employ momentary minds as the cause of the motion in bodies to great effect. By 1676 his commitment to the plenitude has led him to make all minds eternal: "Every mind is of endless duration" and "is indissolubly implanted in matter. ... There are innumerable minds everywhere" which "do not perish" (A VI iii 476–477: Pk 31). In *On the Greatest of Things* minds act constantly and constitute self-sufficient beings that are eternal and indestructible by anything but God. Human minds are created by God and then exist eternally. Nonhuman minds exist from the beginning of the world to its end. Despite appearances to the contrary, Fido the dog does not die but shrinks down to an *invisible core* of substance from which it activates another substance, and so on for all of eternity. This remained Leibniz's view: "There is never total generation nor, strictly speaking, perfect death, death consisting in the

separation of the soul. And what we call *generations* are developments and growths, as what we call deaths are enfoldings and diminutions" (*Monadology* §73).

## marks and traces

The eternity of all mind-like active things is not an obviously plausible theory. Leibniz endorsed it because the eternity of minds adds significantly to the plenitude and harmony of the world. While developing his opinions about plenitude in *On the Greatest of Things*, he hit upon the idea that each mind-like creature eternally perceives the entirety of the world. Each mind "senses all the endeavors" of all the other minds in the whole history of the world; "no endeavor in the universe is lost; they are stored up in the mind, not destroyed" (A VI iii 393: Pk 47). He came to believe that plenitude requires that each moment in the eternity of the world contain its whole history: past, present, and future. Minds not only sense all the present activities of all the minds in the world, they also retain a memory or *trace* of them: "It is not credible that the effect of all perceptions should vanish" (A VI iii 510: Pk 61). Each mind "retains the effect of what precedes it" and also "has a quality of such a kind as to bring this [state or effect] about" (A VI iii 491: Pk 51).

Thus, in 1676 Leibniz develops a version of his doctrine of marks and traces according to which each mind at every moment includes an effect or trace of all it has done as well as a quality or mark of all it will do. In §8 of the *Discourse*, he offers the soul of Alexander as an example: "There are vestiges of everything that has happened to him and marks of everything that will happen to him and even traces of everything that happens in the universe, even though God alone would recognize them all" (A VI iv [B] 1534: AG 41). By making minds eternal, allowing them to sense all endeavors, and assigning them traces of all that has gone before and marks of all that will occur, he makes each mind a mirror of the entire course of the world at every moment in time. Each mind reflects or mirrors the entire world at every moment of the mind's eternal existence. In *Discourse* §15, he summarizes the point in terms of expression: Each substance is of "infinite extension insofar as it expresses everything" (A VI iv [B] 1646). By such means he agrees with Plato "who taught that our soul expresses God, the universe, and all essences" (*Discourse*, §27).

## god and knowledge

Throughout his life Leibniz was keen to acquire information about the world and to contribute to the sciences of his time. He studied history, designed machines, proposed lighting systems, created insurance programs, and contributed to the development of modern physics. Underlying all these enterprises, however, was his commitment to a Platonist epistemology according to which the divine Ideas are instantiated in the creatures in the world and exist in human minds innately. He summarizes this view in §28 of the *Discourse*: "The essence of our soul is a certain expression, imitation or image of the divine essence ... and of all the ideas comprised in it."

From the very beginning of Leibniz's philosophical reflections on universal harmony, he recognizes its epistemological significance. In *Elements of Natural Law* (1668–1671), he presents for the first time the main steps that must be taken to acquire knowledge of fundamental truths. Since the goal of human life is to recognize the beauty and harmony in things, and harmony consists in *consonance* beneath apparent *dissonance*, we must learn to see beyond the dissonance. Once we abstract from the confusion of things and begin to recognize the underlying order of the world, the journey to this ultimate knowledge has begun. The first objects of knowledge are our innate Ideas, each of which is also an Idea in God's mind and so also instantiated in the world. By grasping one of these Ideas in the right way, we begin the process of knowing God and the ultimate nature of things. The goal of life is to recognize that everything is an emanation of God and hence a proper object of love. In a 1671 letter to Arnauld, he concludes this part of the project: "I show that it is the same thing to love others and to love God, the seat of universal harmony" (A II i 173–174: L 150).

In the *Philosopher's Confession* (1672–1673), Leibniz clarifies and expands upon the relation between universal harmony and knowledge: "The nature of mind is to think; therefore, the harmony of the mind will consist in thinking about harmony; and the greatest harmony of the mind or happiness will consist in the concentration of universal harmony, i.e., of God, in the mind" (A VI iii 116–117). The goal of life is to intuit the essence of God, which is evident in the "universal harmony" of the world. The means to this goal is to grasp "the eternal and immutable ... Ideas" (A VI iii 120). The journey to knowledge begins when one "withdraws from the senses and draws back into his own mind." After a sincere "struggle toward the truth," "a stroke of light" may appear "as a split in the darkness" (A VI iii 120–121). Through the proper approach to the world, it is possible to be "admitted to God, i.e., universal harmony," to grasp it "in a single stroke of vision," and thereby to have "delight without end" (A VI iii 139). However, because minds are mostly "deformed" and exist "in shadow," many fail to recognize the "wondrous" interconnections among things (A VI i 464–465).

Leibniz remained committed to this form of innatism throughout his life. Thirty years after the *Elements of Natural Law*, he criticized the empiricism of Locke's *Essay concerning Human Understanding* in his own *New Essays*, noting that innate ideas distinguish us from beasts. According to Leibniz: "This is how ideas and truths are innate in us, as natural inclinations, dispositions, habits, or potentialities." Agreeing with Plato, he maintains: "The soul contains from the beginning the source of several notions and doctrines, which external objects awaken on certain occasions." Endorsing Paul's approach to knowledge, he quotes Paul's Letter to the Romans (2:15): "The law of God is written in our hearts" (A VI vi 49–52: AG 292–294).

Universal harmony increases the possibility for knowledge; the mirroring of minds increases it still more. For Leibniz *the wisdom of God* requires that creatures mirror one another and thereby add to the beauty and harmony of the world. He was motivated to convert the world into a harmony of mirroring substances at least partly in order to maximize the likelihood of such reflective awareness. The mirroring of minds increases variety and harmony because each mind encompasses the whole of existence. In *On the Greatest of Things*, each mind perceives the entire world at every moment of its eternal existence: "It seems to me that every mind is omniscient in a confused way, that any mind perceives simultaneously whatever happens in the entire world" (A VI iii 524: Pk 85). In developing these views about plenitude and harmony, he reasons that it is good to maximize the number of diverse creatures in the world; it is even better to maximize the perception of that infinity of good things by making each creature mirror every other; but it is best to maximize the harmony among creatures by making all minds connected to all others at all moments in the eternity of the world.

Leibniz is rarely as explicit about the close relation between emanation and knowledge as he is in *On the True Mystical Theology*, a German text written (probably) in the final years of the seventeenth century. He begins with the metaphysics of universal harmony and its related epistemology: "Every perfection flows immediately from God. Only the inner light that God himself kindles in us has the power to give us a right knowledge of God." But it is not easy to acquire this knowledge: "The divine perfections are concealed in all things, but very few know how to discover them there. Hence there are many who are learned without being illumined, because they believe not God or the light but only their earthly teachers or their external senses and so remain in the contemplation of imperfections." Each created thing or "self-being" is from God and is therefore "a single self-sufficient" and "indestructible thing."

This separateness from God makes it difficult to recognize the divinity within us, but in our connectedness to God, it becomes easy: "God is the easiest and the hardest being to know." We can find "the essential truth" by seeking out the attributes of God: "The knowledge of God is the beginning of wisdom, the divine attributes are the primary truths for the right order of knowledge." Once we acquire knowledge of an attribute of God, which is present within us as an innate idea, we begin to approach "the essential light," which is "the eternal Word of God, in which is all wisdom, all light, indeed the original of all beings and the origin of truths. Without the radiation of this light no one achieves true faith, and without true faith no one attains blessedness." He summarizes: In each mind "there lies an infinity, a footprint or reflection of the omniscience and omnipresence of God." Were we to acquire this "right knowledge of God," we would thereby attain "all wisdom, all light, indeed the original of all beings and the origin of all truth" (Guhrauer, 411–412: L 367–369).

## Logic, Truth, and Peace

Biographers have claimed that as a boy Leibniz became dissatisfied with the categories of Aristotelian logic. Whatever truth there is in this, the youthful Leibniz joined the growing debate about the possibility of a universal language and a formal system for determining truth. For many seventeenth-century philosophers, the hope was to construct "an alphabet of human thought" that would form the basis for a universal language and a means of identifying truths. Leibniz intended to find a way to assign letters or numbers to the elements of thought so as to produce, "through the analysis of words" a means of judging the truth of all statements in the language. In *Dissertation On the Combinatorial Art* (1666), a young Leibniz begins work on this project, which he calls "the universal characteristic."

Although scholars have often treated Leibniz's account of logic and truth independently of his views about God and emanation, the two parts of his philosophy are closely related. The divine Ideas are the source of all truths, and human minds contain these Ideas innately, so the analysis of truth will involve these Ideas. Opening one of the main sections of *Dissertation On the Combinatorial Art*, he explains: "To begin at the top, Metaphysics treats being and the affections of being" (VI i 170: L 76). In 1671 he observes that although we are "conquerors of the world," we cannot have real knowledge until the mind has clarity about itself (A VI i 459). Leibniz's account of emanation and divine Ideas constitute a major part of the foundation for his program in logic because the ideas innate in us are also those emanated by God in the creations of the world. This connection persists in his thought until the very end; in the *Monadology* he observes that our mind contains "knowledge of eternal and necessary truths ... thus in thinking of ourselves we think of being" and "of the immaterial and of God himself" (§29–30).

The relation between being and truth motivates other projects related to language. As with many of his contemporaries, Leibniz was fascinated with the evolution of languages since the "original language" of Eden. Many assumed that the language spoken by Adam and Eve made the truth more perspicuous and so attempted to recreate it. He went beyond most of his contemporaries in his fascination with the Chinese—both their language and culture. Like many of the Jesuit missionaries in China, he believed that the (apparently) extraordinary insights of the Chinese proved that the *elements of truth* were available to any who knew how to seek them and that the identification of such truths would promote universal communication and eventually universal peace.

## God, Evil, and the Best

### philosopher's confession

Written within a year of his arrival in Paris, the *Philosopher's Confession* is a dialogue in which Leibniz discusses at length and for the first time the problem of evil, a problem that, together with a group of related problems, would engage his attention

for the next forty years. The problem is ancient: How can the evil in the world (say, the suffering of innocents) be reconciled with the existence of an infinitely powerful, just, and good Supreme Being? Already in 1672–1673, he has a solution, one that would remain an important part of his thinking: The goodness of God is sufficient reason to create a world that is the best possible, and (apparent) evil is a necessary part of such a world. His solution is embedded in his notion of universal harmony: The world is the best and most harmonious possible despite the fact that its enormous diversity includes events that often suggest otherwise.

In order to explain how this world is best, it was necessary to develop a more thorough-going account of creation. Leibniz did this in the *Philosopher's Confession*. The divine intellect contains an unspecified number of eternal and immutable Ideas that constitute the divine essence and that God wills to instantiate in the world. That is, the essence of God "contains" the "nature of the things themselves" (A VI iii 124). But the essence of God does not necessitate *this* nature of things. Rather, God selects among possible versions of the divine essence and then emanates the selected version so as to create and sustain the world. He refers to these versions as possible *series of things*; he will later call these possible worlds. Each individual created thing is an instantiation of the (selected) divine essence. Further, God has a sufficient reason for choosing each thing, and each thing has a sufficient reason for acting as it does. He summarizes his position: "The present state of things depends on the series of things. The series of things depends on the universal harmony. The universal harmony depends on those well-known eternal and immutable ideas themselves ... contained in the divine intellect" (A VI iii 131). God is "the sufficient and complete reason" for the world (A VI iii 123). God understands this world to be most harmonious and thereby has sufficient reason to choose it.

Leibniz's *best possible world* solution to the problem of evil gives rise to further problems: One concerns (what scholars sometimes call) the *author of sin*; another concerns the status of human freedom. On Leibniz's account, God causes evil, for God creates the best series of things, including many things that are, when considered in themselves, bad or sinful. In the *Philosopher's Confession* he responds to this problem by pointing out that God takes no delight in the existence of evil and hence is not properly thought to will it. In later works, he came to regard this response as inadequate. According to Leibniz, there is a sufficient reason for every thing that happens in the world. As we will see below, this principle plays an important role in his thinking about the world. When applied to the problem of human freedom, the principle commits him to determinism. For Leibniz, the will is never free of antecedent causes and in that sense it is always determined. But he is also a compatibilist in the sense that, just as God's perfect freedom does not involve lack of determination by the divine essence, so human freedom does not require undetermined choices. Freedom requires only spontaneity, or more exactly, the sort of spontaneity possessed by rational substances.

In both the *Elements of Natural Law* and *Philosopher's Confession*, Leibniz's approach to the problem of evil also has an epistemological aspect. The nature of universal harmony makes the acquisition of knowledge both more difficult and more *glorious*. Because there is a struggle, there will be some who fail. Yet the world is a better place because of the struggle to recognize the harmony among all things. When one sees an "unexpected" unity "where no one would suspect a connection" (A VI i 484–485), there is more delight and happiness. "The most confused discord fits into the order of the most exquisite harmony unexpectedly, as a painting is set off by shadow, as the harmony due to dissonances transforms the dissonances into consonance" (A VI iii 126). "Given that the whole is pleasing, it does not follow that each part is pleasing. ... Only the whole is pleasing, only the whole is harmonious" (A VI iii 130). For Leibniz the beauty and goodness of the whole justifies the *apparent* ugliness and evil of some parts. In the end, the world is better because apparent disorder will "unexpectedly" reveal "the wonderful reason" behind this "greatest" of symmetries (A VI iii 122).

## theodicy

Leibniz's last extended treatment of the problem of evil restates many of the themes from the *Philosopher's Confession*, written almost forty years earlier. The *Theodicy* is a long, digressive work, devoted mainly to the topics listed in its subtitle: the goodness of God, human freedom, and the origin of evil. But the book also functions as a defense of the consistency of faith and reason. It is divided, rather arbitrarily, into three *essays*, preceded by an author's preface and a "Preliminary Dissertation on the Conformity of Faith with Reason," and succeeded by various appendices.

Much of the *Theodicy* consists of Leibniz's responses to other authors, Bayle in particular. His own metaphysical system is in the background. His idealism, for example, is barely mentioned at all. But the characteristic themes of his philosophical theology nevertheless dominate the text, and it is in the *Theodicy* that his most complete response to the problem of evil is found. That response is, at its core, the same as the response that he gave in the *Philosopher's Confession*: that this is the best, that is, the most harmonious of all possible worlds; that the evils within it are not to be judged apart from the entire series of things; that God's perfection requires that only the best possible world be created; that humans therefore cannot reasonably wish that things had been different; that happiness is to be sought through understanding the perfection of God, the creator of all things, and the perfection of all the things that God has created.

The problem of the author of sin, to which Leibniz had given only a weak response in the *Philosopher's Confession*, is in the *Theodicy* handled with much more verve and power. He distinguishes between God's antecedent and consequent will. God wills each possible thing antecedently in proportion to its perfection. But some possible things are not compossible with others, so not all God's antecedent willings can be realized. God's consequent, that is, final and decisive, will is the existence of that series of things that realizes as much perfection as possible. To this account is added an Augustinian idea of metaphysical evil as mere privation or limitation. Thus, God does not will evil at all, for God's willing is directed only toward the perfection in things, and imperfections are nothing at all, and so not even possible objects of will.

The *Theodicy* contains extensive discussion of freedom, including many objections to so-called *freedom of indifference* —the capacity to choose between alternatives that are equally advantageous (or disadvantageous). Leibniz's commitment to the principle of sufficient reason rules out any such capacity, even in the case of God—a conclusion that plays a significant role in some of the argument in his later correspondence with Clarke. He allies himself with Augustine and the Thomists in holding that everything is determined and with Aristotle in requiring as conditions of freedom only spontaneity and intelligence. The rejection of a contra-causal account of freedom also reflects Lutheran doctrine, and one of the declared goals of the *Theodicy* is to provide an account of human freedom on which Catholics and Protestants can agree.

As in other writings Leibniz struggles in the *Theodicy* to give an account of contingency that avoids necessitarianism. Absolute or metaphysically necessary truths exclude any alternative; they rely on the principle of noncontradiction. This kind of necessity is incompatible with freedom, and not even God is free with respect to these truths. Thus, according to Leibniz, God was not free to create spaces with fewer or more dimensions than three, for such spaces are logically impossible. Physical and moral necessity, by contrast, resting on the principle of sufficient reason, is not incompatible with freedom. God is free in choosing to create the best possible world because there are other worlds that are possible in themselves (even though God, being perfect, would not in fact create them); rational creatures are free in the choices they make if there are other options (even though, given preceding causes, they will not in fact choose them). His compatibilist account of freedom appears here in its starkest form: Both divine and human freedom require only the bare logical possibility of some alternative course of action. God is perfectly free because perfectly rational; humans are imperfectly free because less than perfectly rational. Acting against or without reason is, for Leibniz, the paradigm case of unfreedom.

This compatibilism, even if acceptable, leaves little room for contingency, and scholars have long argued the question whether Leibniz manages to avoid the claim that everything that happens, happens necessarily. His standard answer, given many times in the *Theodicy*, is that it depends what sort of necessity is intended. Nothing happens by logical necessity except when the opposite involves a contradiction; everything happens by moral necessity, for unless this entire *series of things* were the uniquely best, God would lack a sufficient reason to create it. It is nevertheless hard to see how any other series of things is ever possible given the necessary existence and perfection of God. Here the tension between his Platonism and the voluntarism of the Christian tradition is at its greatest.

Leibniz himself seems never to have wavered from the underlying optimism of his account of *the best of all possible worlds*. He often notes that he knows no one as happy as he. He summarizes the source of his contentment in a letter to Queen Sophie Charlotte:

But the consideration of the perfection of things, or, what is the same, of the supreme power, wisdom, and goodness of God, who does everything for the best, that is, with the greatest order, is sufficient to make all reasonable people content, and to convince them that contentment should be greater to the extent that we are disposed to follow order or reason." (AG 192)

Leibniz's optimism, and his claim that this is the best of all possible worlds, was viciously satirized by Voltaire in *Candide*. But Voltaire's Dr. Pangloss, the representative of optimism, is a very unreliable guide to Leibniz, or even to the Leibnizianism of his disciple Wolff. Leibniz, from the *Philosopher's Confession* on, insists that the best possible world is not best in all of its parts. By the time of the *Theodicy*, he has a battery of arguments against the kinds of objections that Voltaire advances. But Voltaire's short and witty tale is a far better read than the long and, at times, tedious *Theodicy*, so it is not surprising that its *argument* is better liked.

## Substance, Matter, and Nature

At the very end of his life, Leibniz explains that in order to understand the intellectual *discoveries* of others, it is often necessary "to detect the source of their invention" (G III 568). In presenting his views about God, creation, mind, activity, knowledge, and harmony, it is helpful to detect their Platonist sources. In order to understand his *discoveries* about the natural world, it will be necessary to detect the sources of his *invention*.

### aristotelianism and mechanism

For most of his life Leibniz takes there to be two kinds of basic, natural entities, or substances. The first sort is a corporeal substance constituted of two *principles of nature*: one active, one passive. Corporeal substances are analogous to organisms: They are active, unified things with a material component or body and an organizing principle. The second kind of substance is variously called "mind, soul, spiritual substance," and "substantial form[s]." Although these are the active things in nature, which are tied to a material component of some sort, they are themselves also substances. Toward the end of his life, Leibniz began to call the ultimate components of nature monads. In the world of his monadology, there are only mind-like simple substances in various collections.

The Aristotelian philosophy offered the raw materials for Leibniz's account of substance; the new mechanical philosophy constituted the basis for his physics. Although he transformed those philosophies to suit his own philosophical and theological needs, he remained wedded to (what he considered to be) Aristotle's basic insights about the self-sufficiency of substances and to the mechanists' commitment to explain corporeal phenomena in terms of matter and motion.

For most Aristotelian philosophers, natural objects are constituted of two principles, matter and form, and natural events are explained in terms of the actualization of the potency of these two principles. When Leibniz began constructing his own philosophy in the mid-1660s, there was a new explanatory model available, one that had greatly diminished the power of the scholastic model. According to the mechanical philosophy (as it came to be called), nature is composed of matter—whether the extended stuff (*res extensa*) of Descartes, the atoms of Gassendi, or one of the many less popular accounts of corporeity—whose actions and movements cause and explain all the phenomena of nature. For the mechanist all physical phenomena are to be explained in terms of some kind of matter and motion. Although these thinkers disagreed about how to define the material component in nature, they all took it to be void of substantial forms.

Despite the genuine innovation of the new mechanical philosophy, it failed to solve adequately a number of important theological and metaphysical problems. By the middle of the seventeenth century, especially in the Protestant areas of northern Europe, a number of conciliators took it upon themselves to *reform* the Aristotelian philosophy rather than abandon it. Different reformers had different recipes for mixing the old with the new, but they all combined some part of the mechanical physics with Aristotelian metaphysics. Each claimed that, when properly understood, the Aristotelian philosophy could comfortably accommodate mechanical philosophy. Like these reformers, Leibniz also recognized very early on that the Aristotelian theory of substance could easily accommodate the new mechanical physics and thereby explain the phenomena.

The Aristotelian philosophy appealed to the young Leibniz for several reasons. At the heart of the Platonized Aristotelianism that his mentor, Jakob Thomasius, bequeathed to him stands the idea that nature is constituted of individual corporeal substances whose substantial forms act to compose a divinely arranged harmony. From the beginning of his philosophical career, Leibniz embraced the assumption that everything in the world acts to instantiate the good. Unlike those of his contemporaries who rejected final causation, he embraced the Aristotelian idea that nature moves toward the good. For Leibniz, an Aristotelian account of substance formed a secure foundation for such a rational, harmonious, and good world although it needed to be *reformed* to fit mechanical explanations in physics. He committed himself to the Aristotelian and mechanical philosophies as a youth and maintained this commitment until his death. In the *Monadology* he writes: "Souls act according to the laws of final causes. ... Bodies act according to the laws of efficient causes or of motions. And these two kingdoms, that of efficient causes and that of final causes, are in harmony with each other" (§79).

Leibniz had excellent metaphysical reasons to accept a major part of the Aristotelian philosophy. But he had other incentives as well. From the perspective of warravaged Germany, Aristotelianism must have seemed to Leibniz the safest bet as a philosophy of religious reconciliation. The doctrinal declarations of contemporary Catholics were framed in Aristotelian terms while Aristotelianism survived in Lutheran cities such as Leipzig. Aristotelian notions of substance thus presented themselves as ideal both for understanding the divinely arranged harmony in the world and for working toward religious and political harmony within it.

### substance, self-sufficiency, and the reformation of the mechanical philosophy

The young Leibniz intended to transform the Aristotelian notion of substance so that it would accommodate mechanical physics. For Leibniz, the mechanical physics of philosophers such as Descartes, Hobbes, Gassendi, and Galileo reduces to the following claims: There is some sort of matter or extended stuff (*res extensa*), which is (somehow) moved and whose arrangements both cause and explain the corporeal features of individual bodies; therefore, a body is organized *res extensa*, and all corporeal features are reducible to the arrangements of such extended stuff. Leibniz was *never* satisfied with the metaphysical foundations offered by leading proponents of the mechanical physics; the physical explanations of particular phenomena seemed adequate, but the metaphysical underpinnings of those explanations did not.

Leibniz's most fundamental assumption about the natural world is that it is composed of substances, each of which has its own source of activity by means of which it is constituted as a self-sufficient, unified thing. The material stuff of the mechanical philosophers did not have its own internal source of activity and so was neither self-sufficient nor properly unified; it therefore could not by itself constitute genuine substances. In his earliest comments about substances, Leibniz explains that because the corporeal substance of the mechanists "is not self-sufficient ... an incorporeal principle must be added" (A VI i 490: L 110). This incorporeal principle is a substantial form or mind that organizes the matter and thereby makes it into a unified, self-sufficient thing. He corrects the mistakes of the mechanists by making substance active, allowing it to be both causally and explanatorily complete. He demotes the matter of mechanical physics to the status of the passive principle in substance and insists that the active mind or substantial form organizes the passive principle so as to make a unity with it.

The result is an individual corporeal substance that can act as the cause and explanation of its own (at least) basic features. Although the details of his views about substance will continue to evolve over the course of his long philosophical career (e.g., he comes to conceive the passive principle as itself constituted of mind-like substances and eventually prefers to construct the world entirely out of monads), he never wavers from his commitment to the causal and explanatory autonomy of the fundamental entities of nature. It is this robust self-sufficiency that is his most profound debt to the metaphysics of Aristotle. And it is this robust self-sufficiency that inspired many of the core doctrines of his mature thought.

## The Metaphysics of Substance before 1680

For much of the twentieth century, scholars maintained that Leibniz developed his theory of substance in the 1680s. Except for a few scattered works—mostly those in logic and physics—his earlier texts were either neglected or dismissed as juvenilia. However, close attention to writings from the 1660s and 1670s reveals that Leibniz developed his theory of substance much earlier. In this section we consider the most important of the early texts.

## original assumptions about substance, activity, and self-sufficiency

During the mid-1660s, Leibniz worked on a number of related projects in law, logic, and theology. Encouraged by the distinguished German statesmen Boineburg, he began composition of the *Catholic Demonstrations* in 1668. The work, as Leibniz conceived it then, was to consist of a series of philosophical prolegomena and four parts. The prolegomena were to contain the *elements of philosophy*, that is, the *first principles* of metaphysics, logic, mathematics, physics, and practical philosophy, while the four parts were to be demonstrations of the existence of God, the immortality of the soul, the Christian mysteries (e.g., the Eucharist), and the authority of the church and scripture. The work was designed to offer a metaphysics that would cohere with Catholic and Lutheran doctrine and thereby effect a reconciliation between the two churches. But another sort of reconciliation is promoted within the work, for when Leibniz began the *Catholic Demonstrations*, he was committed to a version of Aristotelian philosophy as he interpreted it and also to a mechanical account of the phenomena of nature.

The theological writings indicate exactly how his reconciliation of these two philosophies evolved in his attempt to explain the theological doctrines of the Eucharist, the immortality of the soul, and so on. He takes the Aristotelian notion of substantial form as the active principle of nature and combines it with the mechanical notion of passive extended stuff as the passive principle to create a coherent *reformed* Aristotelianism. At work in these theological essays are a number of philosophical assumptions. The most important of these are as follows (except for the Principle of Sufficient Reason, the names are not his):

- The *principle of substantial activity* assumes that a being is a substance if and only if it subsists per se, and a being subsists per se if and only if it has a principle of activity within its own nature.
- The *principle of sufficient reason* assumes that there is a complete or sufficient reason for everything.
- A *complete reason* for a state or feature *f*: (1) constitutes the necessary and sufficient condition for *f*; (2) is perspicuous in that, in those cases where one can understand it, one sees exactly why *f* as opposed to some other state of affairs came about; (3) is such that in those cases when a full account of it can be given, that account constitutes a complete explanation of *f*; and (4) does not require a reason of the same type.
- The *logical assumption* claims that, for any state or feature *f*, the logically necessary and sufficient conditions of *f* exist and in theory can be articulated.
- The *intelligibility assumption* claims that those conditions are in theory intelligible.
- The *substantial nature assumption* claims that every substance has a nature that contains the set of necessary and sufficient conditions or the complete reason for those features that strictly belong to it, and moreover, those conditions are in theory intelligible.

The precise status of these assumptions in the *Catholic Demonstrations* and related early texts is unclear. They constitute the underlying principles of Leibniz's discussions during this period. Although in the texts of 1668–1671 they may have the status of working hypotheses, they continue to inform and direct his thinking about metaphysical matters for years to come. Some of his most characteristic doctrines directly develop from these assumptions.

## substantial forms and activity

While developing his account of substances as the fundamental entities of nature in 1668–1671, Leibniz was also working on the *Elements of Natural Law*. As his views about universal harmony evolved, he integrated his Platonist assumptions about activity, emanation, and unity into the Aristotelian and mechanical assumptions about self-sufficiency, substantial forms, and matter. He assumes that substantial forms are divine-like and possess the kind of metaphysical powers described by Ficino. The idea here is that God continually emanates the divine essence to each individual mind and furnishes each mind with its own source of activity thereby generating unity and self-sufficiency. He suggests that each active thing acts constantly according to a *reason* given it by God: "Just as God thinks things ... because they follow from his nature, so does Mind" (A VI ii 287–288). By being Godlike the active principles or substantial forms possess divine-like features, such as unity and self-sufficiency. They also act according to a divinely arranged *reason* (A VI i 534).

The principle of substantial activity reveals the close relation between substancehood and activity: Anything that possesses its own source of activity will be self-sufficient and hence substantial. In Paris, Leibniz develops this idea so that mind-like, active things are indestructible and the source of the individuality, unity, and identity of the corporeal substances of the world. No active creature is ever without a body or passive principle; only divine mind is "devoid of body" (A VI iii 100). God "arranged

all things from the beginning" (A VI iii 477: Pk 31) so as to give each created substance a *rule* or set of instructions by means of which it acts (VI iii 483: Pk 39). As he summarizes his position:

There are certainly many and important things to be said ... about the principle of activity or what the scholastics called substantial form, from which a great light is thrown on Natural Theology and ... the mysteries of faith. The result is that not only souls but all substances can be said to exist in a place only through the operation of their active principle, that souls can be destroyed by no power of body; and that every power of acting exists from the highest mind whose will is the final reason for all things, the cause being universal harmony; that God as creator can unite the body to the soul, and that in fact, every finite soul is embodied, even the angels are not excepted. (A VI iii 158)

In the pre-Paris period, minds are considered constantly active and therefore self-sufficient, unified things. In *On the Greatest of Things*, written during his final year in Paris, Leibniz develops and expands on the relations between activity, self-sufficiency, unity, and divisibility: "whatever acts cannot be destroyed" naturally, and yet "whatever is divided is destroyed" (A VI iii 392–393: Pk 45–47). Mind or substantial form acts as the "cement" in a corporeal substance and thereby guarantees that its passive principle will not be divided (A VI iii 474: Pk 27). Consistent with the theory of corporeal substance developed earlier, the mind-like substantial form acts constantly through its passive principle to create a single "unsplittable" thing, which Leibniz sometimes calls an "atom" (A VI iii 393: Pk 47). This atom or unified thing is a corporeal substance constituted of an active and a passive principle. Consistent with the substantial nature assumption, the nature of the substance acts as the necessary and sufficient condition of its features. In 1676, then, the activity of mind individuates the substance, unifies it, and makes it eternal. Throughout a substance's eternal existence, it is its active principle that will organize its passive principle so as to constitute its eternally self-sufficient nature.

In these early years the persistence of the substantial nature through various changes is especially important to Leibniz because of his concern for developing a metaphysics consistent with Christian doctrine. The doctrine of resurrection, for example, gives rise to the question: How can it be the same human substance that persists through the radical changes in a human life, then dies, and then is resurrected? He explains that the mind "is firmly planted in a flower of substance [that] subsists perpetually in all changes" and that can be "diffused" through a greater or less expanse of the original body (A VI iii 478–479: Pk 33). The mind-like principle of activity acts as the *cement* of the substance and forms the unity that persists through all substantial changes, including even bodily death and resurrection. In a letter to Johann Friedrich of 1671, he explains that in the same way that "God is diffused through everything," so mind is diffused through its body; just as the activities of God do not diminish the divine essence, so too the mind acts on its body "without being diminished" (II i 113).

It is clear from these texts of 1670–1676 that Leibniz believes he has hit upon an account of substance that comfortably accommodates the severe metaphysical demands of Christian doctrine, the physical explanations of the mechanists, and the Aristotelian commitment to the causal completeness and self-sufficiency of substance. Although the details of his position are in flux and will shift over time, the basic structure of this account of substance will not vary until the development of the world of the monadology. For Leibniz, a corporeal substance is a self-sufficient and unified thing that results from a substantial form activating and organizing its passive principle. The substantial form acts constantly on its passive principle by a *set of instructions* given it by God. The passive principle is the substantial form's *instrument of acting*. The unity is what results from the constant activity of the active principle on the passive one, thereby forming an organized unified thing.

### matter, extension, and passivity

Within weeks of entering the University of Leipzig, at the age of fourteen, Leibniz had a major philosophical insight. He recalls walking in some woods near his home and "deliberating whether I should keep the substantial forms" or convert to mechanism. In the end he decided to accept the physical explanations of the mechanical philosophers as opposed to those of the scholastics and thereby "to apply" himself to mathematics (G III 606: L 655). The young Leibniz thus assumes that the passive principle in corporeal substances is material, like the *res extensa* of Descartes. For the next few years he maintains that the active principle or substantial form takes this passive extended stuff, organizes it into an individual body, and thereby creates a unified thing or corporeal substance.

In the theological essays of 1668–1671, he conceives the union between the active and passive principles as involving constant activity, where the mind-like substantial form cannot "act outside itself" except through its passive principle (A VI i 533–534). The unity here is analogous to that in organisms in the sense that if the activity involved in maintaining an organic unity stops, so does the unity. When the maintenance of the organization ceases (e.g., the heart stops, the liver no longer functions), the unity of the substantial form and matter does so as well (e.g., the entity dies, the formerly organized body becomes a heap of decaying flesh). The nature of organic unities also helps us to understand what he means when he says that the active principle cannot act outside itself except through the passive: In order to act externally, the source or cause of the organization has to act through the passive principle that it organizes.

In the 1670s Leibniz became dissatisfied with this account of passivity. There were several problems. First, the mechanical account of body could not easily accommodate important theological doctrines, such as the Eucharist and resurrection of the body. According to the Lutheran account of the *mystery* of the Eucharist, the body of Christ and the body of the bread exist side by side. However, if the body of Christ is a collection of extended stuff, it is unclear how it can be distinct from and coextensive with the extended stuff that constitutes the matter of the bread. Leibniz argues: "For if body and space are one and the same, how can we avoid the consequence that in different spaces or places there must be different bodies" (A VI iii 157–

158). He concludes that the views of the mechanists, who believe that *the essence of body consists in extension*, are therefore incompatible with the miracle of the Eucharist. He also argues that since, according to Descartes and other mechanists, each body is constituted of extended stuff and since all extended stuff is essentially the same, it becomes enormously difficult to give any particular body (say, Christ's body) a stable identity. Leibniz concludes: "One cannot say... why it is called the body of Christ rather than bread, to which it is very similar" (A II i 170). Nor, to take the case of another Christian doctrine, can one say how to identify and individuate bodies at the time of the resurrection.

Another problem facing Leibniz's early account of the passive principle in corporeal substance is less overtly theological. According to the principle of plenitude as he interpreted the ancient doctrine, the world is as full of diverse being as possible. But according to the version of Platonism that Leibniz learned as a university student, matter is uniform, divisible, unreal stuff. In the *Phaedo*, Plato describes it as "as unintelligible, soluble and never consistently the same" (80e). Matter lacks all unity and activity; it contributes nothing positive to the world. It follows from these Platonist assumptions that the world would be made better by filling it with mind-like unified things and stripping it entirely of extended passive matter.

There has been much disagreement among scholars about when Leibniz does finally strip the world of extended stuff. Once we take seriously Leibniz's interest in Platonism and his concern to solve the theological problems posed by doctrines such as the Eucharist and resurrection of the body, it seems relatively clear that he abandons extended stuff while still in Paris although he remains undecided about what exactly to put in its place. In the Paris texts he asks as many questions as he answers: "Since mind is something that has a certain relation to some portion of matter, it must be stated why it extends itself to this portion and not to all adjacent portions; or why it is that some body, and not every body, belongs to it in the same way" (A VI iii 392: Pk 45). In 1676 he did not have consistent answers to these questions; the texts are unclear about the precise nature of the passive principle in substances. However, one of the hypotheses that he entertained is that bodies are themselves unextended collections of mind-like substances whose only actions are perceptual states.

## body and force

The young Leibniz embraced mechanical physics, according to which the features of bodies are to be explained in terms of the broadly geometrical properties of their parts—whether these are tiny indivisible atoms or infinitely divisible stuff—whose configurations shift and change through motion and whose motion changes through collision. When he published his *New Physical Hypothesis* and *Theory of Abstract Motion* in 1671, he agreed with the standard mechanical account of collision as the only means by which bodies naturally change motion. His *abstract* account of motion is offered in terms of the Hobbesian notion of conatus, defined here as "an indivisible, nonextended part of motion" and as "the beginning and end of motion" (A VI ii 264–265: L 139–140). In 1671 he agreed with Descartes that "all power in bodies depends on speed." If two bodies with unequal speeds collide, they will move together after the collision in the direction of the faster body with a speed that is the difference between the two (A VI ii 228). By the time he met Spinoza in the autumn of 1676, he had begun to question features of this mechanical account, and in particular, the law of the conservation of motion proposed by Descartes.

In the winter of 1677–1678, Leibniz takes some observations made by Huygens about impact and transforms them into a notion central to his thought. He decides that force or power of action must be conserved in collision between bodies rather than mere speed. By January 1678 he has hit upon the proper account of this force:  $mv^2$  (mass times velocity squared). Given the importance of this insight, it is odd that he does not publish any part of his findings until 1686, and even then, in his *Brief Demonstration*, he merely criticizes Descartes's conservation principle and ONLY hints at his own account. Over the next few years, he will work out the details of his dynamics, especially in response to Newton's *Principia Mathematica* (1687).

Leibniz's discovery of  $mv^2$  was enormously important and radically changed his account of the physical world. As he explains in the *Specimen of Dynamics* (1695), he was forced to recognize that in physics, purely geometrical notions were inadequate: "We must add to material mass a certain superior and so to speak formal principle. Whether we call this principle form or entelechy or force does not matter so long as we remember that it can only be explained through the notion of force" (GM VI 241: AG 124–135). He notes the easy fit between an Aristotelian approach to substance (whose principle of activity is often described as *form or entelechy*) and the new notion of force. Leibniz had hit upon the basic features of his Aristotelian account of substance in the late 1660s. With the development of his dynamics, all he had to do was to redescribe the active principle in nature. The mind-like substantial forms in nature were now responsible for more than just the activity of creatures; they were also responsible for their force.

## the principle of sufficient reason

Leibniz is well known for his commitment to the principle of sufficient reason, which he often calls his *great principle*. As early as 1668 he assumes that God always has a reason for *choosing* one state of affairs rather than another and that this reason must be sufficient. In 1671 he calls the principle a *first* truth; and by way of demonstration, he adds: "Everything that is has all its requisites" since a state of affairs will not exist unless all its requisites "are given. ... Consequently, everything that is has a sufficient reason" (A VI ii 483). Later in his career he articulates the principle in various ways, often in terms consistent with his account of truth. In the *Monadology*, for example, he presents it as the principle "by virtue of which we consider that we can find no true or existent fact, no true assertion, without there being a sufficient reason why it is thus and not otherwise, although most of the time these reasons cannot be known to us" (§32).

Leibniz's early commitment to the principle is matched by his early application of the principle to God as the sufficient reason of the world and to the natures of substances as the sufficient reason for their features. According to the substantial nature assumption, every substance has a nature that contains the set of necessary and sufficient conditions or the complete reason for its features. But a question arises about which features are covered here. If the nature of a substance is so complete as to contain the sufficient reason for all the features of the substance, then the principle of sufficient reason and the substantial nature assumption together bring us to the brink of two of his more startling metaphysical claims. The first is phenomenalism; the second preestablished harmony.

## preestablished harmony and phenomenalism

Although Leibniz does not use the term *preestablished harmony* until the 1690s (in the 1680s he calls it the theory of *concomitance*), there is significant evidence that he adopted its constitutive tenets in the 1670s and perhaps as early as 1671. The doctrine of preestablished harmony holds that each substance acts out of its own nature (spontaneity), that no substance causally interacts with any other substance (world apartness), and yet that each substance in the world parallels the activities of all the other substances perfectly (parallelism). The theory is closely related to another component of his mature philosophy: phenomenalism. The phenomenalism of the mature Leibniz, what is sometimes called *well-founded phenomenalism*, includes at least the following two claims: Bodies are phenomenal objects and so our perceptions of them arise from our own internal nature; and our perceptions nonetheless correspond to (parallel) the activities of real (unextended and mind-like) substances and in that sense are *well founded*.

The *New System* of 1695 summarizes the doctrines: "We must say that God originally created the soul (and any other real unity) in such a way that everything must arise for it from its own depths, through a perfect *spontaneity* relative to itself, and yet with a perfect *conformity* relative to external things." Since our perceptions are "internal perceptions in the soul itself" they "must arise because of its own original constitution," which is "given to the soul from its creation," and "constitutes its individual character. ... This is what makes every substance represent the whole universe" from its own point of view, and "makes the perceptions or expressions of external things occur in the soul at a given time, in virtue of its own laws, as if in a world apart, and as if there existed only God and itself." In the perfectly harmonious world chosen by God, "there will be a perfect agreement among all these substances, producing the same effect that would be noticed if they communicated" (G IV 484-85: AG 143-44).

There is much, though scattered, evidence in the texts of the 1670s that Leibniz adopted most of the claims constitutive of phenomenalism and preestablished harmony early on. Neither preestablished harmony nor phenomenalism came to him suddenly. Rather, their core claims emerged gradually out of his attempts to solve the theological and philosophical problems that most concerned him. As he reflected on problems in ethics, law, theology, physics, and metaphysics, he developed his account of universal harmony and substance in an attempt to solve those problems. Preestablished harmony and phenomenalism resulted from the convergence of these solutions. These elaborate metaphysical doctrines were the most elegant way to solve a diverse group of difficult problems, to capture the rationality and goodness of God, and to reconcile ancient and modern ideas.

Preestablished harmony may be seen to result from the combination of universal harmony, the self-sufficiency of substances, and the mirroring of substances. According to universal harmony, God emanates the divine essence to every creature. The unity of the world is due to the fact that all creatures express the same thing: its multiplicity to the fact that each creature expresses the divine essence in a different way. The substantial nature assumption may be taken to entail that the complete reason for all the features of a substance is contained in its nature, in which case the complete reason for its perceptual states is contained there as well. The conjunction of the substantial nature assumption and universal harmony suggests spontaneity: For each substance, the manner of its expression of the divine essence will be contained *in its nature*. Further, if we assume that the substantial nature of a substance contains the necessary and sufficient conditions for each and every feature of it, then it seems to follow that the cause of every feature of the substance is *contained* in its nature, which is consistent with world apartness and the idea that there is no causal interaction among substances.

Finally, the theory that each substance mirrors all the others resembles the tenet of parallelism. Indeed, the parallelism of well-founded phenomenalism and preestablished harmony seems to be an extension of the Platonist notion of sympathy: Each substance, in its manifestation of the divine essence, is in perfect sympathy—for Leibniz, in perfect coordination—with every other. The doctrine of marks and traces is itself an elaboration of this notion of sympathy; it is also closely related to the idea that each substance is a world apart. Preestablished harmony is fundamentally emanation and sympathy perfectly organized in the self-sufficient substantial natures of the created world.

In the *Discourse* Leibniz implies that preestablished harmony is the blending of just these assumptions, and he acknowledges its close relation to his phenomenalism: "It is very evident that created substances depend upon God" who "produces them continually by emanation." In order to manifest divine "glory," God creates various substances to "express the universe." It follows from this account of God's relation to the world that "each substance is like a world apart, independent of all other things, except for God" from "whom all individuals emanate continually." By acting on us, God arranges things so that "all our phenomena, that is, all the things that can ever happen to us, are only consequences of our being" such that these phenomena are "in conformity with the world which is in us." It follows that "the perceptions or expressions of all substances mutually correspond" although each expression differs from every other. Finally, "if I were capable of considering distinctly everything

that happens or appears to me at this time, I could see in it everything that will ever happen or appear to me" (A VI iv [B] 1549-51: §14).

Whether or not Leibniz commits himself to phenomenalism in the 1670s, he surely toys with the position. During his Paris period he often reduces the existence of bodies to the consistency of perceptions and concludes: "It does not follow that there exists anything but perception, and the cause of this perception and its consistency." The cause of perception is such that: "a reason can be given for everything and everything can be predicted" (A VI iii 511: Pk 63-65). From the perspective of conscious beings, in order to explain existence, it is unnecessary to resort to outside bodies; rather, we can reduce all existence to the consistency of perceptions, where the latter includes both the consistency of the perceptions within a mind and the coordination among minds: "We sense or perceive that we exist; when we say that bodies exist, we mean that there exist certain consistent perceptions, having a particular constant cause" (A VI iii 512: Pk 67).

In these and related texts of 1676, Leibniz seems to extend the substantial nature assumption to encompass all the features of substances, including their perceptual states. The suggestion is that God gives each substance a set of instructions or *rule* that makes each substantial nature the sufficient cause of all its features, including its perceptions. Thus, consistent with spontaneity and world-apartness, all the features of a substance are caused by its nature and there is no causal interaction among substances. Consistent with parallelism, "existence consists in" the coordinated perceiving of objects so that "several people perceive the same." It is "not necessary either that we act on them or that they act on us, but only that we perceive with such conformity" (VI iii 511: Pk 63). As a "perfect mind" God "arranged all things from the beginning" so as to make them "most harmonious" (A VI iii 474-476: Pk 25-29). For Leibniz in these texts of 1676, a major theme in this harmony is God's coordination of the perceptions among minds. Indeed: "Without sentient beings, nothing would exist. Without one primary sentient being, which is the same as the cause of all things, nothing would be perceived" (A VI iii 588: Pk 113). As he writes to Malebranche in 1679, "I have always been convinced ... that strictly speaking bodies do not act on us" (A II i 472-73: L 210).

## The Metaphysics of Substance, Second Stage

Written during a snow storm in the Harz mountains in 1686, the *Discourse on Metaphysics* is the first general account of Leibniz's mature metaphysics. He sent a synopsis to Arnauld and thereby began the well-known correspondence between these two great seventeenth-century thinkers. Although not published during his lifetime, the *Discourse* and the correspondence with Arnauld, together with the terse summary of metaphysics contained in *First Truths*, have been favorites of twentieth-century Leibniz scholars. These texts have received a large amount scholarly attention, some of which is excellent. But we now know that many of their most important doctrines developed years earlier. For the most part, the *Discourse* and *First Truths* are summaries of doctrines extant in the 1670s, and what is new in them develops neatly from earlier views.

### substances, subjects, and truth

In 1900 Bertrand Russell published a book in which he argued that Leibniz's metaphysics developed from his logic and theory of truth. For much of the twentieth century, scholars agreed with Russell that the theory of truth offers the key to Leibniz's philosophy and that the theory of substance developed out of that theory. With access to more of his writings and through attention to the sources of his ideas, it is clear that the core of his metaphysics—the account of substance and the theory of universal harmony—developed several years before the theory of truth. So, though the mature Leibniz sometimes puts the theory of truth front and center, it developed out of his views about the self-sufficiency, intelligibility, and explanatory completeness of substances; it was a consequence of those other views, not their source.

In 1676 Leibniz begins to emphasize subjects as the bearers of features. This is an important clarification of claims contained in the core metaphysics and constitutes a step toward the development of his conception of truth. One of his basic, Aristotelian assumptions is that substances are causally and explanatorily self-sufficient (at least with regard to their primary features). Another is that the relation between a feature and the substance to which it belongs is both logical and intelligible. These logical and intelligibility assumptions imply, for any feature of a substance, that the substance contains the logically necessary and sufficient conditions for that feature, that these conditions are in theory intelligible, and therefore that the truth of the attribution of the feature to the substance is in theory discoverable in the nature of that substance. When he extends the substantial nature assumption to cover all features, he commits himself to a truth-conferring relation between a substance and its features; a feature is truly predicated of a substance if and only if the nature of the substance contains the complete reason of that feature.

As Leibniz began to refine his views about the relation between the attributes of God and their instantiation in the world in the spring of 1676, he took his first steps toward the development of the idea that truth is a matter of relations among concepts. In *On the Greatest of Things*, he notes the metaphysical significance of substances as subjects or bearers of predicates and of truth as grounded in the relation between substances and their states: "It is a wonderful fact that a subject is different from forms or attributes. This is necessary because nothing can be said about forms on account of their simplicity; therefore, there would be no true propositions unless forms were united to a subject" (A VI iii 514: Pk 69). Once he has hit upon the idea that a substance is a subject in which a modification of the divine attributes has been placed, and once he sees truth in terms of the relation between a subject and such attributes, the materials are in place for the concept containment theory of truth. That there is a close connection between his metaphysical views about self-sufficiency and his theory of truth is clear. In a text of 1676

we find one of his first attributions of completeness to substance: "A substance or complete Being is for me that which alone involves all things, or for the perfect understanding of which, no other thing needs to be understood" (A VI iii 400: Pk 109).

By the spring of 1676, the metaphysical underpinnings of the theory of truth are in place, including the claim that there is a hierarchy of subjects. First there is God, who is the subject of all simple attributes; then there are creatures, each of which is the subject of a partial expression of those attributes. According to Leibniz: "The essence of God consists in the fact that he is the subject of all compatible attributes" or forms while it is the nature of created "subjects" to be "conceived through forms" (A VI iii 514: Pk 69–71). Before creation the Supreme Being conceives the fully articulated essence for each individual substance. It follows that all true statements about the active things in the world will be statements about a substance as a subject and its relation to one of the predicates contained in its complete concept. In such a world all basic truths about the created world involve the inclusion of a predicate in the concept of a subject. For Leibniz, all the truths about an individual substance are contained in its nature.

Against this metaphysical background, it is unsurprising that, when Leibniz began working on logical matters in his early years in Hanover, he concluded that all truths were a matter of concept containment. For Leibniz, all there is in the world are divine attributes and their combinations. In a striking passage of 1676, he acknowledges this point: "There is the same variety in any kind of world, and this is nothing other than the same essence related in various ways, as if you were to look at the same town from various places, or, if you relate the essence of the number 6 to the number 3, it will be  $3 \times 2$  or  $3 + 3$ , but if you relate it to the number 4 it will be  $6/4 = 3/2$ , or  $6 = 4 \times 3/2$ " (A VI iii 523: Pk 83). In a world in which everything is constituted of combinations of divine attributes, it is not difficult to think of truth in terms of concept containment.

In April 1679 Leibniz produced a series of papers titled *On the Universal Calculus* that treat a number of questions related to formal validity and in which he first proposes a concept containment account of truth. Underlying these discussions is the idea that an affirmative categorical proposition is true just in case the concept of its predicate is contained in the concept of its subject. He takes true propositions to signify "nothing other than some connection between predicate and subject" in the sense that "the predicate is said to be in the subject, or contained in the subject" (A VI iv [A] 197: L 236). In the complexities of the logical papers of the late 1670s, we can discern the development of the fascinating view that a theory of truth for categorical affirmative propositions will settle the truth conditions for all propositions.

## Subjects and Truth in the *Discourse on Metaphysics*

The *Discourse* of 1686 is also governed by the series of assumptions found in the early works about activity, self-sufficiency, identity, difference, and the nature of substance although some of the terminology has changed. The most original argument in the text concerns what scholars often call the *logical notion* of substance. This account is introduced in one of the most famous paragraphs in Leibniz's writings. He begins §8 of the *Discourse* with a summary: "To distinguish the actions of God from those of creatures we explain the notion of an individual substance." He then makes two new observations. First, he notes that "it is evident that all true predication has some basis in the nature of things and that, when a proposition is not an identity, that is, when the predicate is not explicitly contained in the subject, it must be contained in it virtually." Second, he suggests that from this account of truth it follows that "it is the nature of an individual substance or a complete being ... to have a notion so complete that it is sufficient to contain and to allow us to deduce from it all the predicates of the subject to which this notion is attributed" (A VI iv [B] 1539–1540). That is, an individual substance has a complete concept that contains all the predicates that can truly be predicated of it.

From these observations about substance Leibniz drew support for his doctrine of marks and traces: There must be something within each substance in virtue of which every predicate is presently true of it and which also provides the basis for the deduction of all the predicates that will ever be true of it, that is, traces of all the features that it has possessed in the past and marks of all those that it will possess in the future. He then begins § 9 of the *Discourse* by noting that "from this" account of substance follow "several notable paradoxes." Among others he lists the indestructibility of substances and the identity of indiscernibles (A VI iv [B] 1541–42).

## Subjects and Truth in *First Truths*

Roughly four years after the *Discourse*, Leibniz wrote a brief essay, usually titled *First Truths*, in which he presents many of his core ideas in terse logical fashion. Although we now know that *First Truths* was written either during or soon after his year-long stay in Italy (A VI iv [B] 1643), scholars in the early part of the twentieth century assigned the text an earlier date (around 1686), and this encouraged the belief that his metaphysics developed out of his theory of truth rather than the other way round. But even if the metaphysics of substance came first, it is nonetheless significant that he came to see the theory of truth as so fundamental.

In *First Truths* Leibniz begins with the account of truth, explaining that in true propositions, the predicate is "always in the subject." This *inclusion* means that all true propositions are identities, some of which are implicit and others explicit. That is, for some identities (for example,  $A$  is  $AB$ ), the inclusion in the subject is explicit; for others (for example, Alexander defeated Darius) it is implicit, and a more thorough analysis of the concept *Alexander* is required. He goes on to claim that "a wonderful secret" about the difference between necessity and contingency lies hidden here. He believes that contingency is a matter of implicit inclusion; necessity a matter of explicit inclusion. All truths are a priori in the sense that the concept of the predicate is

contained in the concept of the subject. But some of these truths are more explicit than others. Those that are not explicit are contingent. After presenting his theory of truth, he claims first that the principle of sufficient reason *directly follows* from it (A VI iv [B] 1645: AG 31). Having given an account of that principle, he runs through all the major tenets of his metaphysics as though they follow from these considerations. Consistent with the substantial nature assumption, he insists: "No created substance exerts a metaphysical action or influx on any other" because "what we call causes are only concurrent requisites" (VI iv [B] 1647: AG 33).

Leibniz's claim that all true predication involves the containment of the predicate in the subject threatens to collapse the distinction between necessary and contingent truths. His stock response to this threat was to distinguish, as in the *Discourse*, between explicit and virtual containment or, as in *First Truths*, between explicit and implicit inclusion. But many critics (including Arnauld) have not been convinced. What does it mean to say that a predicate is contained in a subject virtually or implicitly rather than explicitly? His principal answer to this question, probably developed in the late 1680s in part as a reaction to Arnauld's objections, relies upon a distinction between finite and infinite analysis. Necessary truths are those where the containment of the predicate in the subject is revealed after only finitely many steps of conceptual analysis; a corresponding analysis in the case of a contingent truth would require infinitely many steps and cannot be completed by any finite mind. Only God can see to the end of an infinite analysis. Though some scholars have suggested that this infinite-analysis account of contingency was later abandoned by him, it is to be found in the *Theodicy* (1710) and also in a letter to Louis Bourguet (1678–1742) written in the last year of his life.

Infinite analysis, though it provided Leibniz with a way of distinguishing necessary and contingent truths, raised difficulties for his project of developing the universal characteristic: If contingent truths required an infinite analysis to show that a predicate is contained in the concept of its subject, then even if conceptual connections could be represented numerically, the calculations required to demonstrate them could not be carried out, at least not by any finite mind. He seems largely to have given up on the project after 1690. In the *Monadology* he makes the distinction this way:

There are also two kinds of *truths*, those of *reasoning* and those of *fact*. The truths of reasoning are necessary and their opposite is impossible; the truths of fact are contingent, and their opposite is possible. When a truth is necessary, its reason can be found by analysis, resolving it into simpler ideas and simpler truths until we reach the primitives." (§33)

*First Truths* derives another typical Leibnizian doctrine, that there are no purely relational properties, from the concept-containment account of truth: "*There are not purely extrinsic denominations*. ... For it is necessary that the notion of the subject denominated contain the notion of the predicate. And consequently, whenever the denomination of a thing is changed, there must be a variation in the thing itself." Here the metaphysical presuppositions that lie behind the notion of substance as self-sufficient extend, through the theory that truth consists in conceptual containment, to cover all predications whatsoever. Another Leibnizian doctrine follows immediately: "Every individual substance contains in its perfect notion the entire universe and everything that exists in it, past, present, and future. For there is no thing on which one cannot impose some true denomination from another thing, at the very least a denomination of comparison and relation." It is not surprising that presented with this text, Russell was inclined to see the theory of truth as the heart of Leibniz's mature philosophy. But even in that text, he remarks of the claim that there are no purely relational properties that: "I have shown the same thing in many other ways, all in harmony with one another" (VI iv [B] 1646: AG 32–33).

## unity and aggregates

For Leibniz, one of the main goals of the *Discourse* and related texts is to tempt philosophers such as Arnauld away from Cartesianism and toward the metaphysics of (what he will soon call) preestablished harmony. It is not surprising, therefore, that he is keen to note the various weaknesses of the Cartesian account of corporeal substance. As a means to this goal, he is concerned to show that something whose essence consists merely of *res extensa* is inadequate as a substance. He develops an argument for his account of corporeal substances that has roots in his early views and that highlights a weakness in the Cartesian account of corporeal substance.

Leibniz's early assumption, captured in the principle of substantial activity, is that anything substantial will have its own principle of activity. He also believes that activity alone can generate self-sufficiency and unity. In 1676 he begins to connect self-sufficiency and completeness. He distinguishes substances or "complete things" from bodies or things "with figures." In order to have a "perfect understanding" of a substance, one must only understand the substance or "complete being" itself. But a "figure is not of this kind, for in order to understand from what a figure of such and such a kind has arisen, there must be a recourse to motion. Each complete being can be produced in only one way: that figures can be produced in various ways is enough to indicate that they are not complete beings" (A VI iii 400: Pk 115). In the 1680s he stresses that there will be something real in extension only if there are self-sufficient, unified things. He also begins to describe bodies as aggregates or collections of substances and to distinguish them from a real, single substance. He summarizes the point in 1690: "A BODY [*sic*] is not a substance but an aggregate of substances, since it is always further divisible, and any given part always has another part, to infinity." Therefore: "It is contradictory to hold that a body is a single substance, since it necessarily contains in itself an infinite multitude, or an infinity of bodies, each of which, in turn, contains an infinite number of substances." From this it follows that:

Over and above a body or bodies, there must be substances, to which true unity belongs. For indeed, if there are many substances, then it is necessary that there be one true substance. Or, to put the same thing another way, if there are many

created things it is necessary that there be some created thing that is truly one. For a plurality of things can neither be understood nor can exist unless one first understands the thing that is one, that to which the multitude necessarily reduces." (Foucher de Careil 319: AG 103)

Arnauld wonders what constitutes the difference between a corporeal substance or unity and an aggregate. In response Leibniz insists in his letter of April 1687 that some individuals are fundamental but others are not. The latter are aggregates, which are divisible, destructible, and temporary. They admit of degrees in the sense that they can be more or less unified and more or less divisible (e.g., a pile of rocks is more divisible than a piece of marble). The former are substances, which have a substantial form, each of which creates a *living unity*. There is no reality to an aggregate above and beyond the reality of the entities that make it up. He insists that the unity that bodies or aggregates have is *imaginary*; a perceiving mind may see them as though they were a single thing. He writes to Arnauld that aggregates "have their unity in our mind only, a unity founded on the relation or modes of true substances" (G II 97: AG 86). Aggregates are logical constructions from modes and states of the entities aggregated.

As scholars have long noted, neither the *Discourse* nor the correspondence with Arnauld contains a clear account of exactly how a substantial form confers unity and identity on its substance. But the underlying assumption here, consistent with Leibniz's original views about self-sufficiency and the unifying powers of mind-like things, is that a substantial form confers unity and identity on its substance by acting constantly in relation to its passive principle. In the 1680s he believed that the human soul acts on its body by *concomitance* where the idea is that the two act in perfect preestablished parallelism. He writes in 1690:

Hence, since I am truly a single indivisible substance, unresolvable into many others, the permanent and constant subject of my actions and passions, it is necessary that there be a persisting individual substance over and above the organic body. This persisting individual substance is completely different from the nature of body, which, assuming that it is in a state of continual flux of parts, never remains permanent, but is perpetually changed." (Foucher de Careil 320: AG 104)

### mind-body union and preestablished harmony

There are reasons to believe that Leibniz understood the relation between mind and body in terms of preestablished harmony as early as the 1670s. But it is not until the texts of the 1690s that he put this account of union front and center. In *A New System of the Nature and Communication of Substances, and of the Union of the Soul and the Body*, published anonymously in the *Journal des Savants* in 1695, he offers his account as an improvement over that of Descartes. He explains that it was the problem of "the union of soul and body" that led him to reject Descartes's philosophy and to recognize the need to "rehabilitate the substantial forms" (G IV 482–483: AG 142–143).

Here we have yet another approach to the core metaphysics, cleverly constructed to engage his audience—many of whom would have been quite interested in Cartesianism of one sort or another—on one of the weakest elements in the Cartesian system. The rhetorical hook here is that Cartesian dualism cannot adequately account for the mind-body union whereas preestablished harmony can. In the *New System* Leibniz declares that the great benefit of his metaphysics is that it offers a neat account of the world while at the same time explaining mind-body interaction. Because "it is not possible for the soul or any other true substance to receive something from without," the mind acts out of its own "depths," but with perfect "spontaneity" and in perfect "conformity" to everything external to it, including the substances that make up its body. While each substance expresses the whole universe in its own way, the soul is related to the "organized mass that is its body" more "closely" than to other external things. Both the soul and the substances that constitute its body will express one another more closely than they do other "external" things. He concludes that this "hypothesis" displays "the marvelous idea of the harmony of the universe and the perfection of the works of God" (G IV 485–486: AG 143–144).

According to Leibniz the solution to the problem of the interaction between mind and body resides in the harmony constructed by God between the mind and its body. The mind wills to move its finger and the finger moves in perfect preestablished coordination. As he famously puts it, they are coordinated like two clocks constructed "from the start with so much skill and accuracy that one can be certain of their subsequent agreement." Their "sympathy" is guaranteed by the "divine artifice" that has given each substance its "very own law ... from the beginning" (G IV 498–499: AG 148). In the *Monadology*, he writes: "According to this system, bodies act as if there were no souls (though this is impossible); and souls act as if there were no bodies; and both act as if each influenced the other" (G VI 621: §81).

## Metaphysics of Substance, Monadology

Scholars generally agree that by the time of the *Monadology*, Leibniz holds that the created world is constituted entirely of mind-like monads and that extended things are phenomenal. But there has been a good deal of discussion about when Leibniz gave up the extended substances of his youth. Some scholars have claimed that when he began to construct his own philosophical ideas they were based on a version of mental monism while others have dated the commitment to phenomenalism to the *Discourse* and the correspondence with Arnauld. Until all the writings of the period 1690–1716 have been thoroughly edited and published, there is little chance of solving this mystery. But whenever the phenomenalism begins, there can be no doubt that the notion of corporeal substance plays a key role in the *Discourse* and correspondence. Whether the passivity in such substances is constituted of extended force or collections of mind-like substances, there are corporeal

substances constituted of active and passive principles. At some point after 1700, he seems to have become less convinced that the basic entities of the world should be modeled on organisms conceived as combinations of substantial forms and passive principles. In the late 1690s, perhaps in response to criticisms leveled by Arnauld, he begins to emphasize the simplicity of substances, which he now sometimes calls monads, and to reduce everything in the world to these simple, mind-like monads and their perceptions. He writes to De Volder: "Considering the matter carefully, it must be said that there is nothing in the world except simple substances and in them, perception and appetite" (G II 270: L537).

## monadology

While he was in Vienna, Leibniz wrote this, the most famous of all his works, three years before his death. Written for a friend, he intended it as a summary of his philosophy. Although he did not publish it during his lifetime, generations of scholars have taken it to be the most complete and accurate account of his philosophy. He begins the work with a series of definitions: The monad is "a simple substance that enters into composites—simple, that is, without parts." Monads are the "true atoms" or "elements" of nature and can form aggregates. The activities of monads are of two sorts; they have perceptions and appetitions. "The passing state which involves and represents a multitude in the unity or in the simple substance is nothing other than what one calls perception"; "The action of the internal principle which brings about the change or passage from one perception to another can be called *appetition*" (§14, §15). Although there is a good deal of discussion among scholars about the notion of appetite, it seems closely related to the *reason* or rule of action of the early period. It is the internal feature of the substance that drives it forward, determining its next state on the basis of its present state.

The monad itself may be taken to be another version of his original notion of substance as what is fundamentally unified and self-sufficient. In a related text of 1714, he explains that the Greek term "*monas* signifies unity, or what is one" (G VI 598: AG 207). While there is no doubt that many of the terms and some of the details are new, much of the text merely explicates standard Leibnizian doctrines. We find the various assumptions whose inspiration was originally Platonist. Each monad is an emanation of God, offers a unique perspective on the world, mirrors the universe, and is an indestructible and eternally active thing. He writes: "[Human] minds are images of the divinity itself, or of the author of nature, capable of knowing the system of the universe ... each mind being like a little divinity in its own realm" (§83). We find the commitment to the assumptions whose source was Aristotelian: The self-sufficiency of substance now makes them *windowless*, but they constitute the fundamental entities whose natures anchor the theory of truth, the notion of a complete substance, the expression theory, the perfect coordination and harmony among things. Because each simple substance has its own entelechy, they can act as "the sources of their internal actions" (§18). Because "every present state of a simple substance is a natural consequence of its preceding state, the present is pregnant with the future" (§22).

Thus, the *Monadology* fits neatly into the sometimes subtle but always interesting evolution of Leibniz's views about substance. From the late 1660s to the last years of his life, these fundamental entities constitute the basis for his account of nature. And regardless of the evolution of his ideas about substance, he persists in seeing them as a perfectly rational and divine ordained harmony.

## Summary

Few thinkers in the history of philosophy have written so much, thought so deeply, and contributed so profoundly to so many areas. The vastness of Leibniz's texts, the difficulty of his thought, and the quirkiness of some of his ideas make him both a difficult and delightful philosopher to study. As more and more of his works are published, there will be more gems to discover and more interconnections to discern. Not only does Leibniz offer profound philosophical insights, he is admirable as someone who thought deeply about the history of philosophy and the need for intellectual and political peace. As he wrote at the end of his life: "I have tried to uncover and unite the truth buried and scattered under the opinions of all the different Philosophical Sects, and I believe that I have added something of my own which takes a few steps forward. ... I flatter myself to have penetrated into the Harmony of these different realms" (G III 606: L 655).

*See also* [Aristotle](#); [Arnauld, Antoine](#); [Augustine, St.](#); [Bayle, Pierre](#); [Boyle, Robert](#); [Cartesianism](#); [Clarke, Samuel](#); [Conway, Anne](#); [Descartes, René](#); [Epistemology](#); [Ficino, Marsilio](#); [Fontenelle, Bernard Le Bovier de](#); [Foucher, Simon](#); [Galileo Galilei](#); [Gassendi, Pierre](#); [Hippocrates and the Hippocratic Corpus](#); [Hobbes, Thomas](#); [Kabbalah](#); [Locke, John](#); [Luther, Martin](#); [Malebranche, Nicolas](#); [Metaphysics](#); [Newton, Isaac](#); [Philosophy](#); [Pico Della Mirandola, Count Giovanni](#); [Plato](#); [Russell, Bertrand Arthur William](#); [Spinoza, Benedict \(Baruch\) de](#); [Thomasius, Christian](#); [Thomism](#); [Tschirnhaus, Ehrenfried Walter von](#); [Voltaire, François-Marie Arouet de](#); [Wolff, Christian](#).

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### abbreviations

A: Akademie der Wissenschaften, eds. *Gottfried Wilhelm Leibniz: Sämtliche Schriften und Briefe*. Berlin: Akademie Verlag, 1923–. (Capital roman numerals represent series number; lower case roman numerals represent volume number; arabic numerals represent page number).

AG: Ariew, Roger, and Daniel Garber, eds. *G. W. Leibniz: Philosophical Essays*. Indianapolis, IN: Hackett, 1989.

G: Gerhardt, C. I., ed. *Die Philosophischen Schriften von Leibniz*. 7 vols. Berlin: Wiedmann, 1875–1890. Reprinted, Hildesheim: Olms, 1965.

GM: Gerhardt, C. I., ed. *Mathematische Schriften*. 7 vols. Berlin: A. Asher/Halle: H. W. Schmidt, 1848–63. Reprinted, Hildesheim: Olms, 1962.

Guhrauer: Guhrauer, G. E., ed. *Leibniz' Deutsche Schriften*. 2 vols. Vol. I, 410. Berlin: 1838–1840.

L: Loemker, Leroy E., ed. *G. W. Leibniz: Philosophical Papers and Letters*. 2nd ed. Dordrecht, Netherlands: Reidel, 1969.

Pk: Parkinson, G. H. R., ed. *G.W. Leibniz: De summa rerum: Metaphysical Papers 1675–76*. [New Haven](#), CT: [Yale University Press](#), 1992.

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The standard of Leibniz's original texts is the Academy edition (A above). The projected completion date is 2050. For a discussion of the editorial project, see Christia Mercer on "Gottfried Wilhelm Leibniz: *Sämtliche Schriften und Briefe*, edited by Akademie der Wissenschaften, Berlin: Akademie Verlag, 1923–, Series VI, volume 4," in the *Times Literary Supplement* Oct. 18, 2002, 7–9.

Other than the Academy edition, the best editions of original texts are G and GM (above). Also helpful are:

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*Opera Omnia*. 6 vols., edited by Ludovici Dutens, Geneva: De Tournes, 1768. Reprinted, Hildesheim: Georg Olms, 1989.

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