Cambridge Texts in the History of Philosophy

Antoine Arnauld and Pierre Nicole

Logic or the Art of Thinking

Edited by Jill Vance Buroker

ANTOINE ARNAULD AND PIERRE NICOLE

Logic or the Art of Thinking

Containing, besides common rules, several new observations appropriate for forming judgment

TRANSLATED AND EDITED BY
JILL VANCE BUROKER
California State University, San Bernardino

CAMBRIDGE
UNIVERSITY PRESS

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
40 West 20th Street, New York, NY 10011–4211, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

First published 1996

A catalogue record for this book is available from the British Library

Library of Congress cataloguing in publication data

Arnauld, Antoine, 1612–1694.
Logic, or, The art of thinking: containing, besides common rules, several new observations appropriate for forming judgment / Antoine Arnauld and Pierre Nicole: edited by Jill Vance Buroker. – 5th ed., rev. and newly augmented.
p. cm. – (Cambridge texts in the history of philosophy)
Includes bibliographical references.
1. Logic – early works to 1800. I. Nicole, Pierre, 1625–1695.
II. Buroker, Jill Vance, 1945– . III. Title. IV. Series.
BC62.A713 1996
160–dc20 95–23146 CIP

ISBN 0 521 48249 6 hardback
ISBN 0 521 48394 8 paperback

Transferred to digital printing 2003

CE

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Acknowledgments

The work on this translation began in 1985–6, while I was supported by a grant from the National Endowment for the Humanities to study Cartesian theories of judgment and perception. Since that time many persons have helped me with the translation. I owe special thanks to my former colleague Don Adams for his cheerful aid in translating the Latin quotations. Bruce Golden, Tom Lennon, John Vickers, and an anonymous reader for the Press made helpful suggestions on parts or all of the manuscript. While I continued working on the translation during a sabbatical in Paris in 1990, Philippe de Rouilhan generously provided computer support and office space at his laboratory at the L'Institut d'Histoire et Philosophie des Sciences et des Techniques of the Centre National de Recherche Scientifique. My greatest debt, however, is to Desmond Clarke who, while establishing this series with the Cambridge University Press, gave me constant encouragement, made painstaking comments on the entire text, and showed me a paradigm example of world-renowned Irish hospitality during a visit to Cork in 1990.

Introduction

La Logique ou l'art de penser, better known as the *Port-Royal Logic*, was written by Antoine Arnauld and Pierre Nicole. Arnauld and Nicole were philosophers and theologians associated with the Port-Royal Abbey, a center of the Catholic Jansenist movement in seventeenth-century France. The first edition of the *Logic* appeared in 1662; during the authors' lifetimes four major revisions were published, the last and most important in 1683. This work is a companion to *General and Rational Grammar: The Port-Royal Grammar*, written primarily by Arnauld and "edited" by Claude Lancelot, which appeared two years before the *Logic*. The *Logic* incorporates some theory from the *Grammar*, but develops an account of knowledge and meaning of much greater scope and richness. The *Grammar* is important because it represents a classical "rational" account of language as opposed to recent behavioristic theories. In the last twenty-five years it has received renewed attention, largely due to Noam Chomsky's claims in *Cartesian Linguistics* and elsewhere that it prefigured modern transformational generative grammar. For example, Arnauld and Lancelot recognize that the "surface structure" of a sentence (the organization of the written or spoken sentence) need not mirror its "deep structure" (the aspects relevant to semantic interpretation). There are, however, reasons to question how systematically or self-consciously the *Grammar* develops this view, as well as whether the theory contains other features required to classify it as a transformational generative grammar.[1] Regardless of the historical accuracy of Chomsky's claims, they have raised new interest in the *Grammar*, which prompted a new and

[1] These questions are discussed in Robin Lakoff's review of Herbert Brekle's critical edition of the *Grammar* in *Language*, 45 (1969), 343–64; Karl E. Zimmer's review of *Cartesian Linguistics* in *International Journal of American Linguistics*, 33–4 (1967–8), 290–303; Vivian Salmon's review of *Cartesian Linguistics* in *Journal of Linguistics*, 5–6 (1969–70), 165–87; Hans Aarsleff, "The History of Linguistics and Professor Chomsky," *Language*, 46 (1970), 570–85; Jan Miel, "Pascal, Port-Royal and Cartesian Linguistics," *Journal of the History of Ideas*, 30 (1969), 261–71; Norman Kretzmann, "Transformationalism and the Port-Royal *Grammar*" in *General and Rational Grammar: The Port-Royal Grammar*, ed. and trans. Jacques Rieux and Bernard E. Rollin (Hague: Mouton, 1975); and Jean-Claude Pariente, *L'Analyse du langage à Port-Royal* (Paris: Les Éditions de Minuit, 1985), especially chapters 1 and 2.

lucid translation by Jacques Rieux and Bernard E. Rollin, published in 1975.[2] Meanwhile, philosophers were rediscovering the companion volume, the *Port-Royal Logic*, in many respects a work of greater historical influence. Although the *Logic* borrows some material from the *Grammar*, its most significant contributions to the history of logic and semantics are absent from the earlier work. In general the semantics of the *Port-Royal Logic* are situated in the context of the Cartesian theory of ideas. Its value to us today resides in its curious combination of deep insights and confusions. For if any single work embodies the standpoint from which to understand the major shifts taking place in logic and in theories of language from the seventeenth century to the present, it is the *Port-Royal Logic*.

In this Introduction I explain briefly the historical and philosophical context of the work. The first part sketches the history of the Port-Royal Abbey and Jansenism, and the lives of the authors Antoine Arnauld and Pierre Nicole.[3] The second part discusses the major philosophical themes in the text, focusing on the influence of Augustine, Descartes, and Pascal, as well as on the criticisms of Aristotle, Montaigne, Gassendi, and others. Finally, I comment on the place of the *Logic* in the history of logic and semantics, and the features of greatest philosophical interest.

Port-Royal and Jansenism

Jansenism was a radical reform movement within French Catholicism based on Augustine's views of the relation between free will and the efficacy of grace. To appreciate its controversial nature we must understand it against the backdrop of the Counter-Reformation. This was the response of the Catholic Church to the growth of Protestantism, in which the Church attempted to redefine its doctrine and make institutional reforms. Following the Council of Trent (1545–63), civil war broke out in France from 1562 to 1595, during which Catholicism suffered a serious decline. During the first half of the seventeenth century, churches and abbeys were rebuilt, and new convents and seminaries were established throughout France. Although reforms took place in older orders such as the Benedictines and Franciscans, and new orders came into being, the Society of Jesus remained the most politically influential order. Because of the enmity they aroused in other orders, the Jesuits were expelled both from the Sorbonne and from France in 1594 by a decree of Parliament. The lawyer Antoine Arnauld, father of the author of the *Port-Royal Logic*, played a key role in prosecuting the case against the Jesuits. In 1603, however, the Jesuits were readmitted to France by order of Henri IV, who took a Jesuit confessor.

Seventeenth-century France was marked by conflicts between the Catholic

[2] *General and Rational Grammar: The Port-Royal Grammar.*

[3] The history and biographical information relies heavily on Sainte-Beuve's monumental history of Port-Royal, Alexander Sedgwick's *Jansenism in Seventeenth-Century France*, and A. Bailly's introduction to the Slatkine edition of the *Grammaire générale et raisonnée de Port-Royal.*

Church and French Protestants, the Huguenots, who had been protected by the Edict of Nantes of 1598. But even within Catholicism there were opposing movements. Other religious orders criticized the Jesuits for their interest in the pagan culture of antiquity, their tolerance of liberal thought, and their view that one can act morally of one's own free will. Guided by Luis Molina's work on the compatibility of free will and divine grace, *De Concordia Liberi Arbitrii cum Divinae Gratiae Donis* of 1588, the Jesuits maintained that it is possible to reject God's grace, thereby asserting the priority of human freedom over the efficacy of grace. By contrast, Catholics influenced by the writings of St. Augustine saw humans as powerless to redeem themselves without divine grace. In his writings against the Pelagian heresy (which had denied original sin), Augustine had argued for a form of predestination in which the elect were redeemed by divine grace, which they could not refuse. He claimed, however, that this divine necessity was compatible with human freedom to choose between good and evil. This doctrine of grace attracted scholars at the University of Louvain, in Belgium, where two figures central to Jansenism, Cornelius Jansenius and the Abbot of Saint-Cyran, were later to study theology.

Jansenism was named after Cornelius Jansenius (or Cornelis Jansen), who was born in 1585 in the Dutch Netherlands. He studied theology first at the University of Louvain and later at the Sorbonne. He returned to the Spanish Netherlands where he was ordained a priest, and in 1619 he received his doctorate at Louvain and was admitted to the faculty there. He began his major work *Augustinus* in 1628, envisioning it as the definitive treatise on St. Augustine's theology of grace and free will, but did not complete the work until 1636, when he became the Bishop of Ypres in the Spanish Netherlands. It was not published until 1640, two years after his death from the plague. The treatise *Augustinus* was divided into three parts. The first set the background for understanding Augustine's concept of grace by examining the Pelagian heresy. In rejecting the doctrine of original sin, the Pelagians had argued that one who was untainted by corruption at birth, and who never had the opportunity to know God, could not be condemned. In their view people could attain salvation on their own merits, whether or not they were Christians. In the second part Jansenius argued that Augustine was the best theological authority on matters pertaining to grace. The third part examined the relation between free will and divine grace, and reaffirmed Augustine's view that humans are naturally capable only of evil unless aided by divine grace. These issues – the efficacy of grace, the role of free will in salvation, and the nature of penitence – became the focus of the conflict between Jansenism and more orthodox Catholicism. In fact Jansenism appeared closer to Protestantism than to Catholicism in emphasizing predestination, in putting the spiritual interests of the individual above social interests, and in promoting an elitism in which ordinary individuals do not have access to salvation.

The second major figure in Jansenism was the Abbot of Saint-Cyran, born Jean

Duvergier de Hauranne at Bayonne in 1581. He received his M.A. in theology in 1600 at the Sorbonne. He met Cornelius Jansenius while continuing his studies at the University of Louvain, and the two worked together from about 1611 to 1617 on Scriptural questions and plans for reforming the church. In 1620, two years after being ordained, Duvergier became abbot of the Benedictine monastery of Saint-Cyran. His first controversy took place six years later with the Jesuit scholar Garasse over the efficacy of reason in man's redemption. Christian Pyrrhonists argued that one should suspend judgment on questions on which there was conflicting evidence. Some Catholics used this skeptical position against the Protestant idea that the individual was competent to interpret Scripture. In defending Pyrrhonism, Saint-Cyran portrayed human reason as even more dangerous than the senses, since it is the source of vanity and ignorance. In his claim that wisdom and redemption depend solely on faith, Saint-Cyran articulated a suspicion of reason that was to become prominent in one strain of Jansenism.

The movement named after Jansenius had already begun early in the century, led largely by Angélique Arnauld and the Abbot of Saint-Cyran. Angélique Arnauld, born Jacqueline Arnauld, was the oldest daughter of Antoine and Catherine Arnauld, and older sister of the philosopher Antoine Arnauld. In 1602, at the age of thirteen, she became abbess of the convent of Port-Royal (later known as Port-Royal-des-Champs), a Cistercian abbey founded in the thirteenth century, near Versailles in the valley of the Chevreuse. Six years later she underwent a "conversion," and set about reforming the abbey, instituting monastic rules and closing it off from the outside world. Because of lack of space and unhealthy conditions – the abbey was surrounded by swamps which gave rise to serious epidemics – in 1626 the nuns relocated to Paris, in the Faubourg Saint-Jacques (the men moved nearby about 1637). The following year the Vatican removed Port-Royal from the Cistercian order and placed it under the jurisdiction of the Bishop of Langres and the Archbishops of Paris and Sens.

Angélique Arnauld had met the Abbot of Saint-Cyran in 1625, but they did not develop a close relationship until ten years later. In 1633 the Bishop of Langres, Sébastien Zamet, called upon Saint-Cyran to adjudicate a dispute over the affair of the prayer book. This concerned a special prayer book, the *Chapelet du Saint-Sacrement*, which Angélique's sister Agnès (the former Jeanne Arnauld) had written for the nuns of Port-Royal. The Archbishop of Sens denounced the prayer book as heretical, and eight theologians agreed with him. In response, Saint-Cyran wrote a defense of the prayer book (*Apologie du Chapelet*), which prevented its condemnation. This incident marked an important point in the history of Jansenism, since it was both the first accusation of heresy against Port-Royal as well as Saint-Cyran's first contact with the abbey.

In 1636 Saint-Cyran became the spiritual director of Port-Royal. At about this time he also became associated with a group of men who were to become known as the *solitaires* of Port-Royal. The first and most influential of the *solitaires* was

Antoine Le Maistre, the son of the philosopher Antoine Arnauld's sister, Catherine Le Maistre. Reputed to be one of the best lawyers in Paris, he feared his worldly ambitions. After consulting with Saint-Cyran, he abandoned his career and retired to a little house near the abbey in the Faubourg Saint-Jacques in 1637. He was soon joined by his younger brother, Le Maistre de Sacy, as well as Claude Lancelot and Antoine Singlin. Later *solitaires* included, besides Antoine Arnauld, Arnauld's older brother Robert Arnauld d'Andilly, Pierre Nicole, and Nicolas Fontaine. Although some of the *solitaires* remained laymen, Singlin and Le Maistre de Sacy became priests and served as confessors to the nuns of Port-Royal. In addition to performing manual tasks for the convent, the *solitaires* spent their time reading Scripture and patristic theology, and translating devotional works into French. Perhaps their most important project was founding the Little Schools of Port-Royal.

During the 1630s Saint-Cyran came into conflict with the Jesuits, the Bishop of Langres, and Father Joseph, confidential agent to Cardinal Richelieu. In 1630, Saint-Cyran had refused to endorse the annulment of the King's brother. Then in 1633 there was the affair of the prayer book. He also was identified in 1636 with Jansenius's criticism of France's alliance with Sweden and the Netherlands against Spain. Finally, he opposed Richelieu over the question of penitential discipline. According to the Abbot, genuine repentance required *contrition*, which emanates from a love of God, rather than *attrition*, or fear of punishment, really a form of self-love. Since contrition is much rarer, very few souls are redeemed. For Richelieu, however, the Church had the power to reconcile self-love with God's commandments. Thus the ordinary sinner could be absolved as long as he confessed. Only saints were genuinely contrite, and they were automatically absolved by God without needing to confess.

In 1638 Richelieu had had enough. Declaring that Saint-Cyran was "more dangerous than six armies," he had him arrested and imprisoned at Vincennes on charges of heresy. Although the charges were never substantiated, Saint-Cyran remained in prison for four years, writing letters to the nuns of Port-Royal as well as to Church figures, emphasizing the effects of original sin and the need to isolate oneself from worldly values and temptations. This was the doctrine that inspired the *solitaires* of Port-Royal to leave their secular careers. In early 1643, shortly after Richelieu's death, Saint-Cyran was released from prison. As a result of poor health, exacerbated by his imprisonment, he died later that year. He was buried at Saint Jacques-du-Haut-Pas, a little church near Port-Royal in Paris.

The primary author of the *Port-Royal Logic* was Antoine Arnauld. He was the youngest of Antoine and Catherine Arnauld's twenty children, of whom only ten survived infancy. The Arnauld family was largely responsible for supporting the Port-Royal Abbey. The son Antoine was born on 8 February, 1612, in Paris. His father, one of the most famous lawyers of his time, died in 1619, and the son was raised largely by his mother and his older sister, Catherine Le Maistre. After

studying philosophy with distinction, Arnauld originally wanted to follow his father's footsteps in the study of law. But out of respect for his mother's wishes he decided to study theology. He entered the Sorbonne and became the disciple of Lescot, the confessor of Cardinal Richelieu and later the Bishop of Chartres.

In the four theses he defended from 1638 to 1641, Arnauld exhibited Augustinian views entirely opposed to those of Lescot. This put them in conflict from then on. Even though Arnauld had not fulfilled the conditions normally required for entrance to the Society of the Sorbonne, the Society wanted to admit him because of his rare piety, his extraordinary talent, and the brilliance of his dissertation. Despite Richelieu's opposition, Arnauld was finally admitted in 1641. In preaching the usual sermon in the Church of Notre-Dame, he swore "to defend the truth until my blood flows," an oath which all the professors have since taken. In the same year he was ordained a priest, after having given all his worldly goods to the Port-Royal Abbey.

Arnauld's most important theological work was *On Frequent Communion* (*De la fréquente communion*) of 1643. Although approved by the ecclesiastical province of Auch, several bishops, and twenty-four professors of the Sorbonne, the book became the basis of the persecutions Arnauld would subsequently undergo. In it he argued for the necessity of interior conversion before taking the sacraments. This required true repentance before confession, contrition of the heart (based on love of God) before absolution, and contrite penitence before communion. In general he claimed that one was more likely to achieve redemption by taking communion less frequently. The Jesuits, led by Father Nouet, mounted a furious attack on the work. Unfortunately for Nouet, he had been among the clerics to approve the work, and he later had to undergo the humiliation of disavowing his sermons against Arnauld. Despite this setback, the Jesuits had Arnauld ordered to Rome to defend himself before the Inquisition. Arnauld was saved only because the Parliament and the Sorbonne objected to Rome's interference in a matter they thought concerned only the Church of France. Arnauld went into hiding until 1648, the first of many flights he was to experience. In spite of the original controversy, however, Arnauld's views eventually became generally accepted, even among the Jesuits. The work marked a turning point in the Church. By virtue of the reforms it produced in the administration of sacraments as well as in the method of argument, the book earned Arnauld the name The Great Arnauld (*Le Grand Arnauld*). In describing his style of argumentation, Sainte-Beuve calls Arnauld a "logician without pity" who "erected a dike against the flood of false and subtle theology."[4]

Pierre Nicole, the secondary author of the *Logic*, was born at Chartres in 1625. His father was a prominent lawyer with ties to literary circles in Paris. Nicole studied theology at the Sorbonne, where he came into contact with teachers inclined towards Jansenism, and his bachelor's thesis on grace was suspected of

[4] Sainte-Beuve, *Port-Royal*, vol. 1, p. 285.

heretical implications. When Jansenism came under attack at the Sorbonne, he withdrew and went to Port-Royal-des-Champs. While teaching at the Little Schools of Port-Royal, in 1654 he became Arnauld's secretary, helping translate Latin texts. Nicole eventually became one of the most prominent Jansenist writers of the seventeenth century. His most famous work was the *Moral Essays* (1671–8).

The religious disputes marking the history of Jansenism centered around Jansenius's *Augustinus*, and Arnauld's *On Frequent Communion*. The attack against *Augustinus* began with Isaac Habert's sermons during 1643 and his *Defense of the Faith* of 1644. Focusing on eight propositions which he claimed were heretical, Habert attacked both Jansenius for relying too heavily on Augustine's views concerning grace and Port-Royal for propagating these heretical beliefs. These accusations inspired Arnauld to write his *Defense of Monsieur Jansenius* in 1644 and a *Second Defense* in 1645. In 1649 the issue was again raised when Nicolas Cornet, of the theological faculty of the Sorbonne, selected seven propositions from bachelors' theses which he claimed had heretical implications. Although Cornet denied that these propositions had anything to do with *Augustinus*, they were remarkably similar to the ones attacked earlier by Habert. When the faculty would not rule against the propositions, in 1651 Habert wrote a letter to Pope Innocent X, endorsed by seventy-eight French bishops, urging him to condemn the propositions. After heavy lobbying by representatives of Cardinal Mazarin, who wanted the propositions condemned, in 1653 the Pope issued an encyclical, *Cum occasione*, declaring four propositions to be heretical and a fifth false. The four heretical propositions were these:[5]

1. Some commandments [of God] are impossible to the just, who may wish [to obey them] and may exert all their efforts in that direction; they lack the grace necessary to carry them out.
2. In the state of corrupt nature, one can never resist interior grace.
3. In order to act meritoriously or to be blameworthy, it is not necessary that there be in man a liberty that is exempt from necessity. It suffices that liberty be exempt from constraint.
4. The semi-Pelagians admit to the necessity of an inner prevenient grace for each action, even the act of faith. They are heretics insofar as they believe that man's will may resist or accept that grace.

The false proposition was the following:

5. It is a semi-Pelagian sentiment to say that Jesus Christ died or that he shed his blood for all men without exception.

The encyclical hardly settled the matter, however. In the first place, it never referred explicitly to Jansenius's work. And second, it stated the propositions in a way that allowed for differences of interpretation. The Pope was in fact trying to

[5] These five propositions are given in Sedgwick, *Jansenism*, p. 68.

walk a fine line between the Jansenists and the Jesuits since he did not want to be seen as condemning either St. Augustine's or St. Thomas's teachings on grace. Under pressure from bishops brought together by Mazarin, however, Innocent X wrote a letter to the French bishops stating that the five propositions were maintained by Jansenius.

Arnauld kept his silence until 1656, when the parish of Saint-Sulpice refused absolution to the Duke of Liancourt if he would not withdraw his granddaughter from Port-Royal. Arnauld published two letters, one "To a Person of Condition," the other "To a Duke and a Peer," which contained two propositions censured by the Sorbonne. The first proposition, raising what was called a question of faith (*question de droit*), was this: "The Fathers show us a just man in the person of St. Peter, to whom the grace without which one can do nothing was lacking on one occasion, when we could not say that he had not sinned." The second proposition opened up a question of fact (*question de fait*) in stating: "One may doubt whether the five propositions condemned by Innocent X and by Alexander VII, as those of Jansenius, the Bishop of Ypres, are in this orator's book."[6] While Arnauld agreed that only the Pope could decide whether the five propositions were heretical, he argued that whether they were actually expressed in Jansenius's work was an empirical question to be investigated by each individual. Judging Arnauld for the Sorbonne were Lescot and other professors against whom he had written. When he refused to subscribe to the censure, Arnauld was excluded from the faculty along with seventy-two other professors and several other faculty. In 1656 Arnauld retired to Port-Royal-des-Champs, where he remained until 1669, after the Peace of the Church was declared in 1668.

Following the censure, Arnauld in effect became the oracle of his party, carrying on an extensive and widely read correspondence, directed mostly against the Jesuits. Arnauld furnished the main ideas for Pascal's *Provincial Letters,* written from 1656 to 1657 in support of the Jansenists, as well as publishing several other theological tracts against the Jesuits. His most famous polemics were *Five Writings in Favor of the Paris Curates Against the Remiss Casuists*, the *New Heresy* and the *Illusions of the Jesuits, Remarks on the Papal Bull of Alexander VII, Five Denunciations* of philosophical sins, and the *Practical Ethics of the Jesuits* in eight volumes. While these works were appearing, Arnauld published works of such philosophical significance that many commentators have regretted he ever devoted his time to theological disputes. In addition to the *General and Rational Grammar* and the *Logic*, he wrote the *New Elements of Geometry*, the fourth set of objections to Descartes' *Meditations*, and *On True and False Ideas* against Malebranche. His complete works, which were published at Lausanne in 1780, comprise no less than forty-four volumes.

In 1656, following Arnauld's exclusion from the Sorbonne, Cardinal Mazarin

[6] See Bailly, "Introduction" in *Grammaire générale*, p. xii.

asked the assembly of the clergy to endorse both the encyclical *Cum occasione* and Pope Innocent X's letter attributing the five propositions to the *Augustinus*. The assembly drew up a formulary for all members of the French clergy to sign, promising to obey the papal decrees. In 1655, Innocent X was succeeded by Pope Alexander VII. Although the new Pope did not want to strengthen Mazarin's position, Alexander finally issued a third papal encyclical, *Ad sacram*, in 1657. Here he stated explicitly that the five condemned propositions were found in *Augustinus*, and he condemned them as Jansenius had interpreted them. Mazarin carried out his final act against the Jansenists when he closed the Little Schools in 1659. Although the Little Schools had never enrolled more than fifty students at a time, they exerted a disproportionate influence because of the reputations of both the faculty and students, and the publication of such treatises as *Rules for Educating Children*. Teachers included Claude Lancelot and Pierre Nicole. The most famous students were undoubtedly Jean Racine and the historian Sébastien Le Nain de Tillemont.

In April 1661 the Council of State decreed that all churchmen must sign the formulary drawn up in 1657. Even nuns and lay schoolteachers were required to sign. The text of the formulary read:

> I submit sincerely to the constitution of Innocent X of May 31, 1653 [*Cum occasione*], according to its proper meaning as set forth in the constitution of our Holy Father Alexander VII of October 16, 1656 [*Ad sacram*].
>
> I recognize that I am obliged to obey these constitutions, and I condemn with heart and mouth the doctrine contained in the five propositions of Jansenius in his book entitled *Augustinus* that two popes and the bishops have condemned, the doctrine that is not at all that of Saint Augustine, entirely misinterpreted by Jansenius.[7]

The Jansenists responded by appealing to Arnauld's distinction between questions of faith and questions of fact: whether a doctrine was heretical was a matter of faith, but whether it was found in a book or held by a certain person was a matter of fact. Although the Church was infallible in questions of faith, the truth of questions of fact depended on human judgment, which is not infallible. The Jansenists, and particularly the nuns, were divided on whether they should sign the formulary. Shortly before her death in 1661, Angélique Arnauld expressed the view that the appropriate response to persecution is humility and submission in silence. Others agreed that although the Church did not have the right to demand submission on questions of fact, those who disagreed on these matters should maintain silence. They thought one should sign the formulary, while maintaining mental reservations about the Church's position on questions of fact.

A more intransigeant position was outlined by Blaise Pascal's sister, Jacqueline (Sister Euphémie of Port-Royal), who argued that a signature of any kind was

[7] See Sedgwick, *Jansenism*, p. 108.

incompatible with Christian sincerity. She also challenged the view that women should yield to their superiors, stating that if bishops had the courage of women, then women ought to have the courage of bishops.[8] In her view, endorsed by her brother, anyone who signed the formulary, even while holding mental reservations, was condemning the sacred doctrine of efficacious grace.

Arnauld and Nicole took a third, intermediate position on the formulary, namely that the five propositions were heretical but did not appear in the *Augustinus*. Although Arnauld thought the propositions were highly ambiguous and could be interpreted in both heretical and orthodox ways, he reasoned that the best way to defend Jansenius was to submit on the question of faith. Hence he argued for signing the formulary while appending a statement maintaining a respectful silence on the question of fact. Le Maistre de Sacy, Lancelot, and Le Nain de Tillemont also adopted this position.

In June 1664 the new Archibishop of Paris personally appeared at Port-Royal-de-Paris to interrogate the nuns who had to decide individually whether to sign. Twelve intransigeant nuns were removed to other convents, and the nuns who remained at Port-Royal were put under the supervision of another order. The intransigeant nuns who signed only with express reservations, including Agnès Arnauld, were deprived of the sacraments and confessors, and many experienced severe psychological hardships. In July 1665 the nuns who had been dispersed from Port-Royal-de-Paris were permitted to go to Port-Royal-des-Champs.

After the Peace of the Church in 1668, Pope Clement IX forbade further discussion of the issues connected with the formulary. He permitted the nuns of Port-Royal to participate in the sacraments, and released Le Maistre de Sacy and Fontaine from the Bastille, where they had been imprisoned in 1666. Also in 1669 Arnauld emerged from Port-Royal, announcing his intention to cease defending Jansenism. Both Pope Clement IX, his secret protector, and Louis XIV received him as a man of great distinction and a defender of the Church. Despite these honors he was never able to return to the Sorbonne. During the 1670s, Port-Royal-des-Champs experienced a few years of tranquillity. It re-admitted boarders and postulants, and the *solitaires* returned to their religious tracts. Arnauld and Nicole wrote against the Huguenots and in support of the revocation of the Edict of Nantes. Arnauld also published *The Perpetuity of the Faith of the Catholic Church Concerning the Eucharist* in 1669 in which he attempted to mark Jansenism off from Protestantism, and to smooth over relations with the Church. In 1670 Arnauld, Nicole, and others published the notes Pascal had made for his work defending Christianity, under the title *Thoughts of Monsieur Pascal on Religion and Several Other Subjects* (*Pensées*). Many of the ideas contained in Pascal's writings also appeared in Nicole's important *Moral Essays*, which appeared during the 1670s.

[8] Ibid., p. 117.

Although after the Peace of the Church Arnauld wrote primarily against the Protestants, he eventually returned to attacking the Jesuits. This finally provoked the mistrust of the King, and Arnauld was once again forced into hiding. In 1679, with the conclusion of the war against the Dutch and the death of their patroness the Duchess of Longueville, Port-Royal again found itself under siege, this time by King Louis XIV. The confessors, postulants, and pensioners of Port-Royal were expelled by decree of the archbishop of Paris. Arnauld went into exile in the Austrian Netherlands in 1679, and wandered from city to city, writing with an ardor that never abated. He continued to criticize both Protestants and ecclesiastical officials for interfering with free inquiry into natural phenomena. In part this defense was based on a fear of the effects of free thinking, since drawing a firm line between religious and scientific matters would protect divine authority in questions of theology. When Pierre Nicole, who had joined him in exile, admitted one day that he was tired of waging war, Arnauld remarked that he would have all of eternity to rest. But unlike Arnauld, Nicole yearned for peace. So he returned to Paris in 1683 where he was reconciled with the authorities. He died in Paris in 1695. Antoine Arnauld died at Brussels on 8 August 1694, at the age of 82. His body was buried in the Church of Saint Catherine at Brussels. His heart was taken to Port-Royal, and in 1710 was moved from there to Palaiseau.

Following Arnauld's death, Jansenists continued to circulate polemical tracts and to feud with the Jesuits. The issue of the formulary was again raised in 1701 before the faculty of the Sorbonne. This case concerned Pascal's nephew, the priest Louis Périer, who had continued to proclaim the doctrines of efficacious grace and contrition. The question was whether he was entitled to final absolution on his deathbed. When forty professors affirmed his rights, Louis XIV again decided to take action against the Jansenists. He had the Jansenist leaders Pasquier Quesnel and Gabriel Gerberon arrested in the Spanish Netherlands by his nephew King Philip V of Spain in 1703. Gerberon was eventually imprisoned at Vincennes, and was released in 1710 after signing the formulary. Quesnel escaped from prison, but his papers and correspondence were confiscated by the Spanish authorities. Aided by the Jesuits, Louis XIV persuaded Pope Clement XI to promulgate another encyclical, *Vineam Domini*, against the Jansenists. Arriving in France in 1705, it specifically condemned maintaining a silence on the question of fact concerning the five propositions of Jansenius. In 1703 the nuns had again been ordered to sign the formulary, and again they refused to sign without noting their reservations. Finally Louis received the Pope's permission to suppress the convent, and in 1709 he dispersed the nuns. He had the bodies of the more prominent *solitaires* and nuns moved elsewhere or thrown into a common grave, and in 1711 the buildings were leveled. A final encyclical, *Unigenitus*, promulgated in 1713 by Pope Clement XI, condemned 101 propositions from Quesnel's *Moral Reflections* including, among other ideas, the doctrine of efficacious grace, Saint-Cyran's notion of contrition, the right to translate Scripture into the vernacular, and the right of informed Christians

to interpret Scripture on their own. Despite these attacks and the end of Port-Royal, Jansenism survived until the Revolution of 1789.

Philosophical themes and influences

Although St. Augustine shaped the theology of Jansenism, René Descartes was the true philosophical father of the *Port-Royal Logic*. In contrast to Jansenists such as Saint-Cyran and Le Maistre de Sacy, who suspected the efficacy of reason, Arnauld and Nicole wholeheartedly embraced Descartes' rationalism. In fact, the Port-Royal theory of knowledge is taken almost verbatim from Descartes. But Cartesian rationalism is, in its broad outlines, compatible with Augustinian views, and so Arnauld and Nicole often cite the authority of both philosophers. The philosophy of the *Logic* is not confined, however, to epistemological questions. For Descartes the theory of knowledge is inextricably linked with his views of mental and physical reality. Hence we also find Arnauld and Nicole espousing Cartesian dualism as well as the principles of Descartes' mechanistic physics.

In endorsing Cartesian thought the authors of the *Logic* stand squarely opposed to Aristotle and the Scholastics on most philosophical issues. Hence the *Logic* contains criticisms of practically all of Aristotle's fundamental ideas, most borrowed directly from Descartes. Arnauld and Nicole also attack their empiricist contemporaries – especially Thomas Hobbes and Pierre Gassendi – not only for their erroneous views about knowledge, but also for their mistaken metaphysical and physical theories. A third major target is Montaigne, first, for his skeptical arguments, and second for his libertine tendencies. In what follows I shall summarize these main themes in the *Logic*.

As we have seen, the Port-Royal theology is based on St. Augustine's doctrines of original sin, the natural incapacity of humans to act morally of their own free will, and the irresistible efficacy of grace. Moreover, although Arnauld and Nicole accept the Augustinian view that faith and reason each has its own proper domain – religious matters for faith, natural phenomena for reason – they emphasize the importance of human reason in supplementing faith in theological matters. In chapter 12 of Part IV, citing Augustine, they maintain that faith always presupposes some reason, since reason persuades us that there are things we ought to believe, even though we lack the appropriate evidence.

In setting out their philosophical foundations, the authors borrow whole arguments from Descartes' *Rules for the Direction of the Mind*, *Discourse on the Method*, and *Meditations*, occasionally acknowledging their source. The issues most addressed concern the nature and sources of ideas, the analysis of mental faculties, and the primacy of reason or the understanding in attaining certainty. Underlying the entire text is Descartes' anti-empiricist principle that certainty depends solely on the intellect. In Parts I and IV of the *Logic*, Arnauld and Nicole argue that it is possible to attain certainty concerning the nature of both mental and physical reality. This indubitable knowledge is based on self-evident propositions intuited

by the understanding. Following Descartes, the authors label these perceptions "clear and distinct," although their analysis, in chapter 9 of Part I, differs somewhat from Descartes' account. The authors also cite Descartes' famous *cogito* argument ("I think, therefore I am") as the primary example of knowledge by intellectual intuition. As Arnauld and Nicole recognize, a version of this argument appeared in Augustine, who also claimed that it is impossible to doubt that one is thinking and existing (or is alive, as Augustine but not Descartes would have it). In Augustine this is referred to as the "interiorization principle," and it coincides exactly with Descartes' view that truths about one's own mental states are self-evident and self-verifying. Like Descartes, Arnauld and Nicole regard mathematics, and in particular geometry, as the paradigm of knowledge. Despite their criticisms in Part IV of Euclid's definitions and the order of his proofs, they maintain that only mathematics exhibits the essential features of a true science, in the simplicity of its concepts and the rigor of its demonstrations.

On the other side of the same coin, the authors share Descartes' mistrust of sensory experience and his evaluation of sensory states as obscure and confused. They cite the usual cases of deception by the senses and agree with Descartes that such sensible qualities as color, sound, odor, taste, hot and cold, are merely the content of sensations in the mind and not real properties of corporeal substances. Even though sense perception plays a role in developing scientific hypotheses, and spatial images are occasionally useful in geometry, a true understanding of reality is based on purely intellectual representation. In fact, the empiricist reliance on the senses, characteristic of Aristotelian and Scholastic thought, is an infantile form of epistemology. Just as the child assumes that the world really is the way it appears, empiricists are misled by a naive trust in sense experience. By means of the correct use of "natural reason" and the Cartesian method of doubt, however, the knower can overcome these childhood prejudices and can attain a scientific understanding of the world.

The rationalism of the *Port-Royal Logic* is also partly responsible for its anti-rhetorical polemics. Combined with the puritanical nature of Jansenism, their rationalism leads the authors to condemn writing that relies heavily on metaphorical or figurative styles. Following the line that sensory experience interferes with clear and distinct perceptions of reality, Arnauld and Nicole argue that philosophical writing should avoid appeals to the passions. Now when one's purpose is to arouse emotion in the reader – for example, to inspire love of God – then a more figurative style may be appropriate. But whenever the subject concerns speculative matters that ought not affect the emotions, an ornate style only leads to sophisms and fallacious reasoning.

In addition to the empiricists, a second target of Port-Royal's criticisms are the skeptics, and particularly ancient Pyrrhonism as revived by Montaigne. The Cartesians were not threatened by skeptical arguments concerning the senses, because they denied that the senses played any significant role in producing certain

knowledge. But the matter is quite different concerning skepticism with regard to reason. So the authors are particularly harsh against philosophers who question the capacity of reason to produce knowledge about oneself, God, and the external world. In fact they accuse Montaigne and other skeptics of insincerity and hypocrisy because they deny the self-validating nature of clear and distinct perception.

Cartesian metaphysics and physics are also well represented in the *Logic*. Descartes' major contribution to metaphysics was his dualism, his account of the mind and the body as two distinct kinds of substance. The defining attribute of a mind or soul is thinking, whereas the feature essential to corporeal substance is being extended spatially. Since Descartes thought there was no necessary connection between thinking and being extended, he maintained that minds and bodies share no properties in common and are capable of existing independently. Among existing things, human beings are unique in being a composite of mental and corporeal substances. As states of consciousness, experiences are mental states, although they may be causally related to states of physical substances. Aristotle, by contrast, had a non-dualistic or functional conception of the soul as the principle of life in all living things. For him even plants and nonhuman animals are endowed with souls. Only humans, however, are capable of higher rational activities. Thus Aristotle and Descartes differ radically over the conception of the soul and its relation to physical substance. It is no surprise, then, to find attacks on Aristotle's view of the soul throughout the *Logic*. Their dualism also leads Arnauld and Nicole to object to the view that all reality is physical, whether espoused by ancient philosophers such as Lucretius, the Epicureans, and the Stoics, or their contemporaries Hobbes and Gassendi. Many of these arguments occur in the discussions of definition, and the types of confusions that can take place in defining words.

Equally prominent is Port-Royal's espousal of Descartes' mechanistic physics. As we saw above, Arnauld and Nicole agree with Descartes that sensory qualities cannot be real properties of physical things. The only properties belonging to bodies are extension, motion, and shape. In consequence, all changes in physical states can be accounted for in terms of the motions and impacts of particles on one another. In endorsing Cartesian physics, the authors of the *Logic* condemn as "occult" explanations in terms of "natural motion" or "attractive" powers acting at a distance, such as magnetism and gravity. They also share Descartes' objection to the Scholastic theory of substantial forms. According to this theory one body transmits a quality such as heat, for example, to another by transmitting the "form" of heat from the first to the second body. From the mechanistic point of view, these substantial forms are every bit as mysterious and unintelligible as forces acting at a distance. Now one peculiarity of Descartes' mechanism is his identification of matter with extension. Unlike atomists, who distinguish between the space a particle occupies and the matter making up the particle, Descartes thought matter is constituted solely by extension. Hence there is no such thing as empty space.

Following this line of reasoning, Arnauld and Nicole also argue against theories postulating a void, whether advocated by the ancients or their contemporary Gassendi.

Finally, the *Logic* is indebted to Blaise Pascal for the theory of definition in chapters 12 through 15 of Part I, as well as the account in Part IV of the relation of definitions to axioms and demonstrations. Although Aristotle had distinguished nominal from real definitions (that is, definitions of words from definitions of things), Pascal extended this analysis in *On the Geometrical Mind and the Art of Persuasion* (probably written between 1657 and 1658). His treatment is noteworthy for rejecting the earlier theory of definitions in terms of genus and difference, and for substituting a Cartesian account in terms of the ideas naturally available to all. Pascal also argued that it is impossible to define all terms, since some ideas are so simple that words expressing them cannot be defined. Many of these views are imported wholesale into the Port-Royal theory of scientific method.

The place of the *Port-Royal Logic* in history

The *Port-Royal Logic* was the most influential logic from Aristotle to the end of the nineteenth century. The 1981 critical edition by Pierre Clair and François Girbal lists 63 French editions and 10 English editions, one of which (1818) served as a text in the course of education at the Universities of Cambridge and Oxford. The work treats topics in logic, grammar, philosophy of language, theory of knowledge, and metaphysics.

As I mentioned earlier, the semantics of the *Logic* is an interesting amalgam of medieval and seventeenth-century theories. Arnauld and Nicole attempt to force a Cartesian view of judgment, none too happily, onto the traditional theory of categorical propositions and a medieval term logic. Similarly, in spite of their Cartesian views of intellectual intuition and the nature of inference, the authors devote Part III on reasoning to the medieval theory of syllogism. So problems are raised, inevitably, by the attempt to graft a new theory of knowledge onto an existing logical framework.

Descartes' influence is evident in two basic features of the semantics. First is the view that thought is prior to language, that words are merely external, conventional signs of independent, private mental states. On this view, strictly speaking, linguistic utterances signify the thoughts occurring in the speaker's mind. Although the association between words and ideas is conventional and thus arbitrary, language can signify thought insofar as both are articulated systems: there is a correlation between the structure of a complex linguistic expression and the natural structure of the ideas it expresses.

The second feature is the general framework of the Cartesian theory of ideas, including both a philosophy of mind as well as an epistemology. Although Arnauld and Nicole depart from Descartes in some of the details of this theory, by and large they accept its general assumptions. First is the traditional view that there are four

mental operations required for scientific knowledge: conceiving, judging, reasoning, and ordering. These operations must occur in this order, since each operation has for its elements the product of the preceding operation. Arnauld and Nicole agree with Descartes that conceiving consists in a simple apprehension of ideas by the understanding, whereas judging is an action of the will. It is possible to operate on ideas without making judgments, for example, to form complex ideas out of simpler ideas, and to analyze complex ideas into their parts. The Port-Royal authors differ from Descartes in identifying forming a proposition with the act of judgment. Descartes himself drew a sharp line between making a judgment and merely apprehending a proposition, since in mere apprehension the mind is passive, and Descartes thought it possible for an idea to take a propositional form. The Port-Royal treatment of the verb unfortunately makes it impossible to distinguish between simply apprehending a proposition and judging its truth. In the *Logic* the verb both connects the subject and predicate, and has assertive force; hence, forming a proposition is equivalent to judging it.

Another classical aspect of the *Logic* is the treatment of negation. Port-Royal follows the tradition in treating affirmation and denial as two polar forms of judgment. On their account, propositions containing negative particles such as "not" constitute denials as opposed to affirmations. Further, denial is an action opposite to affirming. Since in affirming one connects the subject- and predicate-ideas to form a propositional unity, in denying one must separate the subject from the predicate. Hence negation belongs to the action rather than to the propositional content of the act.

The Port-Royal semantics is a good example of the traditional "two-name" theory of the proposition. Every simple proposition is composed of the same elements: a subject, a predicate, and a copula. Following the theory of categorical propositions, the authors classify all propositions by quantity as universal, particular, or singular, and as affirmative or negative by quality. They also follow the tradition in treating singular propositions as universals. Hence they use the standard A, E, I, O designations for universal affirmative, universal negative, particular affirmative, and particular negative propositions. In trying to force more complex forms of proposition into this categorical framework, Arnauld and Nicole run into the difficulties which motivated the development of modern logic at the end of the nineteenth century.

Despite their traditional view of the proposition, the Port-Royal semantics is based on Descartes' metaphysics. Without using the terminology, they recognize the medieval distinction between categorematic and syncategorematic expressions. Categorematic expressions, or "terms," are those which can serve as a subject or predicate of a proposition. Syncategorematic expressions include verbs and quantifiers, since they signify operations on ideas (such as judgment) rather than the ideas themselves. Undoubtedly the most significant contribution of the *Port-Royal Logic* to semantics is the analysis of general terms. General terms are

categorematic words such as "man" and "philosopher" that signify ideas representing more than one individual. In chapters 6 and 7 of Part I, the authors recognize two aspects of the significance of general terms: the comprehension and the extension. The comprehension of a general term consists of the set of attributes essential to the idea it expresses; the extension is constituted by the "subjects to which this idea applies." Unlike the modern view, which identifies the extension of a predicate with the individuals to which the term applies, Port-Royal conceives the extension as including the species (or subsets) of the general idea as well as the individuals (members of the set) possessing the relevant attributes. Despite this ambiguity, the analysis marks an important simplification of the medieval theory of supposition, which attempted to account for all the varieties of reference. Although the distinction was prefigured in both ancient and Scholastic works and was also formulated by Leibniz, the Port-Royal account represents the clearest treatment up to that time.

A second important contribution to the history of semantics is the authors' analysis of the difference between restrictive or "determinative" and nonrestrictive or "explicative" subordinate clauses, developed in the discussions of complex terms and complex propositions. Although their theory of embedded propositions runs into difficulty with their view of the difference between ideas and propositions, their treatment is noteworthy for foreshadowing the distinction between analytic and synthetic propositions.

To appreciate the place of the *Port-Royal Logic* in history, it might be helpful to recall the major developments in logic and philosophy of language after the seventeenth century. Perhaps the first important shift came with Kant's theory of judgment as a synthetic activity in *The Critique of Pure Reason* (1781). Although Kant accepted the traditional logic, he rejected both Descartes' notion of passive intellectual intuition of the truth, and the priority of conceiving to judging. Gottlob Frege inaugurated modern logic by discarding the traditional theory of the proposition. First he did away with the subject-predicate analysis, including the traditional theory of the copula. In its place he substituted a sharp distinction between expressions for objects, which he characterized as "complete," and function-expressions, which are "incomplete" in the sense that they contain gaps for other expressions. Here the unity of the proposition depends not on a linking term such as the copula, but on the fit between complete and incomplete expressions. This syntactical basis allowed him to lay the framework for both sentential and quantificational logic. Negation was analyzed as a sentential function, part of the content of a proposition, rather than the act of denial. At one stroke Frege dismantled the traditional classification scheme of affirmative and negative propositions. The invention of quantifiers replaced the classification of universal, particular, and singular propositions, and permitted an account of embedded generality that was not possible on the traditional subject-predicate analysis.

Subsequent developments in the philosophy of language and philosophy of mind

have led to a view of meaning as more holistic and socially dependent than the Cartesian view. Wittgenstein's private language argument posed a serious challenge to the account of language as a merely external expression of private, independent thought. Speech act theory has generalized the notion of the force of an utterance, already present in Frege's account of assertion, and brought into relief the contextual aspects of meaning. With a few exceptions, most philosophers regard these developments as putting a definitive end to the Cartesian views that thought is prior to language, and conceiving prior to judging.

There are, of course, many other aspects of the *Port-Royal Logic* of interest to philosophers, linguists, theologians, and rhetoricians. In this introduction I have concentrated only on the features having the most general philosophical import. My hope is that this translation will arouse a new interest among English-speaking scholars in the complex constellation of views presented in the *Logic*.

Chronology

1612	Antoine Arnauld born, Paris, 8 February
1625	Pierre Nicole born, Chartres, 19 October
1633	Arnauld enters the Sorbonne
1640	Jansenius's *Augustinus* published
1641	Arnauld receives doctorate at the Sorbonne; is admitted to the Society of the Sorbonne
1643	Arnauld publishes *On Frequent Communion*
1644, 1645	Arnauld publishes two defenses of Jansenius
1648	Arnauld ordered to Rome; goes into hiding
1653	Pope Innocent X issues encyclical *Cum occasione*, declaring four propositions in *Augustinus* heretical
1654	Nicole becomes Arnauld's secretary
1655–6	Arnauld publishes two letters, "To a Person of Condition" and "To a Duke and a Peer"
1656	Arnauld expelled from the Sorbonne; goes to Port-Royal-des-Champs
1657	Pope Alexander VII issues encyclical *Ad sacram*, condemning *Augustinus*
1659	Cardinal Mazarin closes the Little Schools of Port-Royal
1660	Arnauld publishes *General and Rational Grammar* with Claude Lancelot
1661	Angélique Arnauld dies
1662	First edition of *Logic or the Art of Thinking* published, by Arnauld and Nicole
1664–5	Nuns at Port-Royal in Paris are dispersed by the Archbishop of Paris
1668	The Peace of the Church is declared
1669	Arnauld returns to Paris
1669–79	Arnauld publishes *The Perpetuity of the Faith*, with Nicole
1670	Arnauld publishes Pascal's *Pensées*, with Nicole and others

1679	Arnauld goes into exile in Flanders, then the Netherlands
1683	Nicole returns to Paris; fifth edition of *Logic*
1694	Arnauld dies, Brussels, 8 August
1695	Nicole dies, Paris, 16 November

Further reading

The classical history of the Port-Royal Abbey and the development of Jansenism in France is available in French in C. A. Sainte-Beuve, *Port Royal* (3 vols., Paris, Bibliothèque de la Pléiade, 1961–5). Alexander Sedgwick's more recent history, *Jansenism in Seventeenth-Century France* (Charlottesville, University Press of Virginia, 1977), presents a clear account of the theological and political controversies in which Jansenists engaged. Ruth Clark's *Strangers and Sojourners at Port Royal* (New York, Octagon Books, 1932; reprint 1972) details the connections between the British Isles and the Jansenists of France and Holland.

Very little of Arnauld's work has been translated into English. In addition to the Dickoff and James translation of the *Logic* and the translation of *The General and Rational Grammar* by Rieux and Rollin, his best known writings have been the *Fourth Objections to the "Meditations on First Philosophy"* in *The Philosophical Writings of Descartes*, trans. by John Cottingham, Robert Stoothoff, and Dugald Murdoch (3 vols., Cambridge, Cambridge University Press, 1985–91), vol. 2; and his correspondence with Leibniz, in *Leibniz: Discourse on Metaphysics, Correspondence with Arnauld and Monadology*, trans. by G. R. Montgomery (Lasalle, IL, Open Court, 1968). Two English translations of Arnauld's *On True and False Ideas* appeared in 1990. The more accurate one is Elmar J. Kremer's *On True and False Ideas, New Objections to Descartes' Meditations and Descartes' Replies* (Lewiston, NY, Edwin Mellen Press). Also available is Stephen Gaukroger's *On True and False Ideas* (Manchester, Manchester University Press).

Until recently, few books were published on the philosophical views of Arnauld and the Port-Royalists. An earlier text was Jean Laporte's *La Doctrine de Port-Royal* (2 vols., Paris, Presses Universitaires de France, 1923). Another is L. Marin's *La Critique du discours: Sur la "logique de Port-Royal" et les "Pensées" de Pascal* (Paris, Les Éditions de Minuit, 1975). In the past several years, new interest in Arnauld's work and his connections to other thinkers of his time has resulted in several volumes. An overview of Arnauld's thought is available in A. R. Ndiaye's *La Philosophie d'Antoine Arnauld* (Paris, J. Vrin, 1991). Steven Nadler's *Arnauld*

and the Cartesian Philosophy of Ideas (Princeton, Princeton University Press, 1989) studies Arnauld's controversy with Malebranche over the status of ideas. R. C. Sleigh, Jr., examines Arnauld's relations to Leibniz in *Leibniz and Arnauld: A Commentary on Their Correspondence* (New Haven, CT, Yale University Press, 1990). Toronto Studies in Philosophy has published a collection of articles on various aspects of Arnauld's thought, *The Great Arnauld and Some of His Philosophical Correspondents*, ed. Elmar J. Kremer (Toronto, University of Toronto Press, 1994). The last four volumes have fairly detailed bibliographies.

Even among Arnauld's commentators, relatively little attention has been paid to his logic and linguistic theory. Marc Dominicy's *La Naissance de la grammaire moderne* (Brussels, Pierre Mardaga, 1985) examines the formal aspects of the Port-Royal semantics and pragmatics. Jean-Claude Pariente's *L'Analyse du langage à Port-Royal* (Paris, Les Éditions de Minuit, 1985) presents a less technical discussion in six essays. Two earlier articles are Jan Miel's "Pascal, Port-Royal and Cartesian Linguistics," *Journal of the History of Ideas*, 30 (1969), 261–71, and Dragan Stoianovici, "Definite Descriptions in *Port-Royal Logic*," *Revue Roumaine des Sciences Sociales, Série de Philosophie et Logique*, 20 (1976), 145–54. Finally, I discuss the Port-Royal semantics and its relations to modern semantic theory since Frege in two essays, "The Port-Royal Semantics of Terms," *Synthese*, 96 (1993), 455–75, and "Judgment and Predication in the Port-Royal Logic" in *The Great Arnauld*, ed. Kremer, pp. 3–27.

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Note on the text and translation

La Logique ou l'art de penser was first published in 1662 and saw four major revisions during the authors' lifetimes. The definitive state of the *Logic* is represented by the final 1683 version. It contains several highly significant additions, notably chapters 4 and 15 of Part I, and chapters 1-2 (taken from the *Grammar*), and 12 and 14 of Part II. The main text is introduced by a Preface (*Avertissement*), a Foreword (*Avis*), and two Discourses. The first Discourse appeared in the first (1662) edition; the second Discourse was added in 1664 and contains replies to criticisms of the previous edition.

This translation is based on the critical edition by Pierre Clair and François Girbal, which first appeared in 1965 and was revised in 1981.[1] Clair and Girbal use the 1683 version of the *Logic* as their basis and indicate textual variations from the four earlier versions in footnotes. Their edition also contains a chronological catalogue of all French, Latin, and English editions, as well as richly detailed annotations, based on notes originally provided by two nineteenth-century editors, Charles Jourdain and Alfred Fouillée. A second major French edition in three volumes was published in 1967 by Bruno von Freytag Löringhoff and Herbert E. Brekle.[2] Volume 1 contains the original (1662) text of the *Logic*, volume 2 lists textual variants from 1664–83, and volume 3 consists of textual variants between the 1662 text and the manuscript Fr. 19915 of the Bibliothèque Nationale, evidently an early handwritten copy of the *Logic*.[3] There are only minor differences between the Clair–Girbal and the Löringhoff–Brekle editions – mostly a few discrepancies in attributing citations.

Until 1964, contemporary English-speaking readers had access only to the nineteenth-century Thomas Spencer Baynes translation. This edition is serviceable although outdated. In 1964 *The Art of Thinking*, translated by James Dickoff and Patricia James, was published. It favors readability and plausibility over accuracy, and

1 *La logique ou l'art de penser*, édition critique par Pierre Clair et François Girbal (Paris, J. Vrin, 1981).

2 *L'art de penser: La Logique de Port-Royal*, édition par B. von Freytag Löringhoff et H. E. Brekle (Stuttgart-Bad Cannstatt, Friedrich Frommann Verlag, 1967).

3 See p. 3 n. 3.

may thus be unsuitable for close scholarly work. As the translators mention in their introduction, for example, Arnauld and Nicole do repeatedly conflate theses about thought, language, and the external world, and this cannot fail to strike the modern reader as muddled. But these confusions are themselves of considerable philosophical and historical interest, and the tendency of Dickoff and James to introduce post-Fregean distinctions not found in the original can mislead those without access to the French text. The present translation strives to render the original as faithfully as possible – confusions and all – trusting the reader to sort things out.

Although this is a work on logic and language, the reader should keep in mind that the vocabulary of the seventeenth century does not approach ours in precision. While the authors clearly recognize the difference between the validity and the soundness of an argument, for example, they typically evaluate arguments in rather general, nontechnical terms. Thus an argument may be "good" (*bon*) or "bad" (*mauvais*), and even "true" (*vrai*) or "false" (*faux*). Fallacious arguments may be labelled "vicious" (*vicieux*) or "defective" (*défectueux*). In analyzing syllogisms their term most closely approaching "valid" is *concluan*, but since some "concluding moods" (*modes concluans*) of syllogisms violate the rules of logic, the translation here cannot be exact. In short, the reader is cautioned not to take occurrences of English terms such as "valid" and "sound" in this translation to represent technical equivalents in the French. I have generally tried to avoid literal translations such as "true argument" which would be jarring to a modern reader.

A second case where caution is advised concerns the French verb *convenir à* which literally means "to agree with or to conform to." The difficulty arises because the authors use the term widely and indifferently to express a relation sometimes between ideas, sometimes between ideas or words and the things they signify, and occasionally even between genus and species. The term is translated here variously, depending on the context. Where it expresses a logical relation between ideas, for example, this text may say one idea "conforms to" or "is compatible with" another. Where the term indicates a semantic relation between a word and a thing, it may say the word "applies to" the thing. Again the reader is warned not to assume that these differences represent technical distinctions in the French. My aim throughout has been to make the translation both accurate and sufficiently general to avoid anachronism, while rendering the French into smooth and idiomatic English.

This translation follows the Clair and Girbal format, and thus chapters are organized as in the fifth edition. (The table below displays the differences among the five major editions.) For readers who wish to compare this translation with the French, the page numbers from the Clair and Girbal 1981 edition are given in brackets in the text. I have maintained the paragraph breaks in the original while translating sentences more freely, since the authors' sentences are extremely long. Also, the French text includes many Latin quotations, only some of which were translated into French. Where Arnauld and Nicole did not provide a translation, an English translation appears in brackets following the Latin quotation.

The annotations rely heavily on those of Clair and Girbal, and fall into three types. The first, marked by letters, give textual variants from the first four editions. Those which quote exactly from an earlier edition begin with three dots, and end with roman numerals in parentheses specifying the editions in which the variant occurred. Others simply indicate the edition in which a passage first appeared. A second type of note gives sources of works cited in the text, where possible listing a readily available English translation. In cases where the authors' quotations from other works are not exact, the note identifies the discrepancy. The last type contains biographical information on less well-known figures referred to in the text as well as sources of some of the Port-Royal views. For the sake of brevity I have not reproduced all the Clair and Girbal references to works of other philosophers, particularly Descartes, from which Arnauld and Nicole borrow; readers who are interested in this information should consult their edition.

ORGANIZATION OF CHAPTERS IN THE FIVE EDITIONS

	I (1662)	II (1664)	III (1668)	IV (1671)	V (1683)
	...	...	...	...	Preface
	Foreword	Foreword	Foreword	Foreword	Foreword
	Discourse	1st Discourse	1st Discourse	1st Discourse	1st Discourse
	...	2nd Discourse	2nd Discourse	2nd Discourse	2nd Discourse
Part I	I–III	I–III	I–III	I– III	I–III
	...	...	...	...	IV
	IV	IV	IV	IV	V
	V	V	V	V	VI
	VI	VI	VI	VI	VII
	VII	VII	VII	VII	VIII
	VIII	VIII	VIII	VIII	IX
	...	IX	IX	IX	X
	IX	X	X	X	XI
	X	XI	XI	XI	XII
	XI	XII	XII	XII	XIII
	XII	XIII	XIII	XIII	XIV
	...	...	...	...	XV
Part II	...	...	...	...	I
	...	...	...	...	II
	I	I	I	I	III
	II	II	II	II	IV
	III	III	III	III	V
	IV	IV	IV	IV	VI
	V	V	V	V	VII
	VI	VI	VI	VI	VIII
	VII	VII	VII	VII	IX

ORGANIZATION OF CHAPTERS IN THE FIVE EDITIONS (*contd*)

	I (1662)	II (1664)	III (1668)	IV (1671)	V (1683)
	VIII	VIII	VIII	VIII	X
	IX	IX	IX	IX	XI
	...	...	...	...	XII
	X	X	X	X	XIII
	...	...	...	...	XIV
	XI	XI	XI	XI	XV
	XII	XII	XII	XII	XVI
	XIII	XIII	XIII	XIII	XVII
	XIV	XIV	XIV	XIV	XVIII
	XV	XV	XV	XV	XIX
	XVI	XVI	XVI	XVI	XX
Part III	I-VIII	I-VIII	I-VIII	I-VIII	I-VIII
	IX	...	...	...	...
	X	IX	IX	IX	IX
	XI	X	X	X	X
	XII	XI	XI	XI	XI
	XIV	XII	XII	XII	XII
	...	XIII	XIII	XIII	XIII
	...	XIV	XIV	XIV	XIV
	...	XV	XV	XV	XV
	XIII	XV–2	XV–2	XV–2	XVI
	XV	XVI	XVI	XVI	XVII
	XVI	XVII	XVII	XVII	XVIII
	XVII	XVIII	XVIII	XVIII	XIX
	XVIII	XIX	XIX	XIX	XX
Part IV	...	I	I	I	I
	I	II	II	II	II
	II	III	III	III	III
	III	IV	IV	IV	IV
	IV	V	V	V	V
	V	VI	VI	VI	VI
	VI	VII	VII	VII	VII
	VII	VIII	VIII	VIII	VIII
	VIII	IX	IX	IX	IX
	IX	IX–2	IX–2	IX–2	X
	X	X	X	X	XI
	XI	XI	XI	XI	XII
	XII	XII	XII	XII	XIII
	XIII	XIII	XIII	XIII	XIV
	XIV	XIV	XIV	XIV	XV
	XV	XV	XV	XV	XVI

Logic or the Art of Thinking

Containing, besides common rules, several new observations appropriate for forming judgment

Fifth edition, revised and newly augmented

Preface to this new edition (1683)

We have made several important additions to this new edition of the *Logic*, which resulted from objections some ministers made to some of our remarks, thereby obliging us to clarify and defend the rights they wanted to attack. These clarifications will show that reason and faith are in perfect agreement, like streams from the same source, and that we can scarcely distance ourselves from one without removing ourselves from the other. But although these additions were prompted by theological disputes, they are no less appropriate or natural to logic.[1] We could have made them even had there never been ministers in the world who wanted to obscure the truths of faith with false subtleties. [13]

[1] This refers to chapters 4 and 15 of Part I, and chapters 12 and 14 of Part II, which concern the controversies with the Calvinists over the Eucharist.

Foreword

The birth of this little work is due entirely to chance, and more to a kind of entertainment than to a serious plan. While conversing with a young nobleman[1] who, at a tender age, displayed a very sound and discerning mind, a gentleman told him that when he was young he had found a man who helped him master part of logic in two weeks. This speech prompted another person who was present, and who had no great esteem for this science,[2] to reply in jest that if the young nobleman wanted to take the trouble, he would take it upon himself to teach him everything useful about logic in four or five days. After discussing this extravagant proposal for a while, they resolved to make the attempt. But since ordinary logic books were thought to be neither short nor precise enough, they decided to create an abridged version just for the young nobleman.

This was our sole aim when we began the work, and we thought it would not take us more than a day. But once the work was under way, so many new thoughts came to mind that we had to write them down to unburden ourselves. So instead of one day it took us four or five to write the body of this *Logic*, to which we have since made various additions.

Now although we included much more material than we had originally intended, the attempt nevertheless succeeded as promised. For, after the young nobleman reduced the material to four tables, he learned it easily, one table a day, requiring practically no help from anyone to understand it. Of course we should not expect others to learn it so easily, since he had an extraordinary mind for intellectual matters.

Such was the chance encounter which brought about this work. But whatever one thinks of it, no one can justly disapprove [14] of its publication, which was more forced than voluntary. For several persons had made handwritten copies, which as everyone knows cannot be done without introducing many errors, and we were warned that the bookstores were getting ready to print it.[3] Given these circumstances, we decided it was better to give it to the public correct and whole rather than letting it be printed from defective copies. But this also obliged us to

1 Charles-Honoré d'Albert (1646–1712), the future Duke of Chevreuse, was the son of the Duke of Luynes, who translated Descartes' *Meditations* into French.

2 Probably Arnauld himself.

3 The Bibliothèque Nationale contains a manuscript numbered Fr. 19915, which is attributed to Arnauld but which is undoubtedly only a copy. It bears the catalogue number 2663 from the library of St. Germain-des-Prés, and the inscription *Ex dono D. Vallant ex biblioth. S. Germani a pratis 1683*. Brekle conjectures that it was made by a curé named Vallant from St. Germain-des-Prés. Based on references in the text, he argues that it was based on a draft of the *Logic* dating from 1659 or 1660. When compared to the first edition this text is incomplete, missing several chapters from each part. For a detailed comparison of the text of the manuscript with the first edition see volume 3 of Löringhoff and Brekle.

make various additions which increased its size by nearly a third, because we thought we should extend our views beyond the original version. This is the subject of the following discourse, in which we explain our proposed aim and the rationale for the material treated here. [15]

First discourse

Where the plan of this new logic is presented

Nothing is more praiseworthy than good sense and mental accuracy in discerning the true and the false. All the other mental qualities have limited uses, but an exact reason is generally useful in all aspects and all walks of life. It is difficult to distinguish truth from error not only in the sciences, but also in the majority of subjects people discuss and affairs they conduct. There are different routes practically everywhere, some true, others false. It is up to reason to choose among them. Those who choose well are those who are mentally acute; those who take the wrong path have faulty minds. This is the first and most important difference we can note in the qualities of people's minds.

Thus our main concern ought to be educating our judgment and making it as precise as possible. This ought to be the goal of the greatest part of our studies. We use reason as an instrument for acquiring scientific knowledge, when, on the contrary, we should use the sciences as an instrument for perfecting reason, since mental accuracy is infinitely more important than all the speculative knowledge to be attained by means of the truest and most reliable sciences. This should move wise persons to engage in speculation only to the extent that it serves this purpose, to make it merely the test and not the main use of their mental powers. [16]

If we do not follow this plan, we will not see that the study of speculative sciences, such as geometry, astronomy, and physics, is more than merely idle amusement, nor that they are much more valuable than ignorance of all these things. Ignorance at least has the advantage of being less painful and not giving rise to the foolish vanity often produced by these sterile and fruitless sciences.

Not only do these sciences have nooks and crannies of very little use, but they are completely worthless considered in and for themselves. People are not born to spend their time measuring lines, examining the relations between angles, or contemplating different motions of matter. The mind is too large, life too short, time too precious to occupy oneself with such trivial objects. But they are obligated to be just, fair, and judicious in all their speech, their actions, and the business they conduct. Above all they ought to train and educate themselves for this.

This care and study are even more necessary given how rare a quality is precise judgment. Everywhere we encounter nothing but faulty minds, who have practically no ability to discern the truth. They view everything from the wrong angle; they are satisfied by the worst reasons and want to satisfy others with them. They let themselves be carried away by the slightest appearances; they are always in excess and extremes; they have no grasp for holding firmly to the truths they know because they are attached to them more by chance than solid enlightenment. Or else they insist on nonsense with such obstinacy that they hear nothing that could set them straight. They decide boldly about what they do not know, what they do

not understand, and what perhaps no one has ever understood. They fail to distinguish one statement from another, or they judge the truth of things only by the tone of one's voice: whoever speaks easily and soberly is right; anyone who has some trouble explaining himself or who exhibits some passion is wrong. This is all they know.

This is why there are no absurdities so unacceptable that they do not find approval. Anyone who sets out to [17] trick the world is sure to find people who will be happy to be tricked, and the most ridiculous idiocies always encounter minds suited to them. After seeing so many people infatuated with the follies of judicial astrology, and sober people taking this subject seriously, we should no longer be amazed at anything.[1] There is a constellation in the heavens which some people were pleased to name the Balance, which resembles a windmill as much as a balance. The balance is the symbol of justice; therefore those who are born under this constellation will be just and fair. There are three other signs of the zodiac, one called the Ram, another the Bull, a third the Goat, which could just as easily have been called the Elephant, the Crocodile, and the Rhinoceros. The ram, the bull, and the goat are animals that ruminate. Therefore those who take medicine when the moon is in these constellations are in danger of vomiting it up. However extravagant these reasonings, there are people who peddle them and others who let themselves be persuaded by them.

This defect of the mind causes not only scientific errors, but also the majority of mistakes committed in civil life: unjust quarrels, ill-founded lawsuits, hasty opinions, and badly organized enterprises. All but a handful of these have their source in some error or mistake in judgment, so that there is no fault we have more interest in correcting.

But this correction is as difficult to achieve as it is desirable, because it depends largely on the amount of intelligence we have at birth. Common sense is not so common a quality as people think. There are countless unrefined and stupid minds which can be reformed, not by giving them knowledge of the truth, but only by restricting them to matters within their grasp and by preventing them from judging about what they are not capable of knowing. It is true, however, that most false judgments do not arise from this principle, and that they are caused only by impetuosity and lack of attention, which make us judge recklessly about things we know only confusedly and obscurely. The little love people have for the truth causes them not to take the trouble most of the time to distinguish what is true

[1] Judicial astrology concerned judgments about human affairs, as opposed to judgments about natural or physical processes. The latter, known as natural or scientific astrology, was used in medicine, meteorology, and alchemy. It was considered unobjectionable by most medieval writers, because Aristotelian physics assumed that the heavenly bodies influenced sublunary processes. But both Christian and Moslem writers denied the validity of judicial astrology, primarily because it was incompatible with free will. Augustine made extended attacks on judicial astrology in *The City of God*, Bk v, chs. 1–7, and in *The Confessions*, Bk iv, ch. 3, *Writings*, vol. 6, pp. 241–51 and vol. 5, pp. 76–8. St. Thomas made a similar argument in *Summa Theologiae*, Ia, quest. 115, art. 4, pp. 7–11.

from what is false. [18] They let all sorts of pronouncements and maxims enter their souls; they would rather suppose them true than examine them. If they do not understand them, they like to believe that someone else does. So they fill their memories with innumerable false, obscure, and misunderstood ideas, and then they reason following these principles without considering in the least what they are saying or thinking.

Vanity and presumption contribute even more to this defect. People believe it is shameful to doubt and to be ignorant, and they would rather speak and decide haphazardly than admit that they are not well enough informed about something to render a judgment. We are all full of ignorance and errors, and yet it is the most difficult thing in the world to draw from our mouths this admission which is so accurate and describes our natural condition so well: "I am mistaken, and I know nothing about it."

There are others who, by contrast, are enlightened enough to know that a great many matters are obscure and uncertain. Wanting from a different kind of vanity to show that they are not swayed by popular credulity, they take pride in maintaining that nothing is certain. Thus they relieve themselves of the burden of examining these matters, and based on this unsound principle they call into doubt the most constant truths, including religion itself. This is the source of Pyrrhonism, another extravagance of the human mind. Although it appears contrary to the recklessness of those who believe and decide everything, it nevertheless comes from the same source, namely lack of attention. Whereas the believers do not want to take the trouble to identify errors, the skeptics do not want to bother to contemplate the truth with enough care to recognize its evidence. The least glimmer is enough to persuade the former of completely mistaken views; it suffices to make the latter doubt the most certain things. But the different effects in these two cases result from the same lack of attention.

Right reason accords all things their appropriate status. It makes us doubt those that are doubtful, reject those that are false, and recognize in good faith those that are evident. It is not influenced by the Pyrrhonists' vain arguments, which do not destroy our reasonable assurance [19] in matters that are certain, not even in the minds of those who present them. No one ever seriously doubted whether there is an earth, a sun, or a moon, or whether the whole is greater than its part. Of course people can bring themselves to say outwardly – orally – that they doubt these things, because they can lie. But they cannot assert them in their minds. Thus Pyrrhonism is not a sect of persons convinced of what they say, but a sect of liars. And so they often contradict themselves in expressing their views, since their hearts do not agree with their tongues. This is evident in Montaigne, who tried to revive Pyrrhonism in the last century.

For after saying that the Academics differed from the Pyrrhonists in admitting that some things were more likely than others, which the Pyrrhonists would not acknowledge, Montaigne declares for the Pyrrhonists in these terms: "The

Pyrrhonists' view," he says, "is bolder and at the same time more likely."[2] Thus some things are more likely than others. He is not just stretching the point in saying this, since these words slipped out without his thinking about them, arising from the depths of his nature, which the lie in his opinions cannot stifle.

But the harm is that, in matters that are not directly tied to the senses, people who take pleasure in doubting everything either prevent the mind from focusing on what could persuade them, or they apply themselves to it only imperfectly. Consequently they fall into a voluntary uncertainty with respect to religious matters, because the murky state they achieve for themselves is pleasant and convenient for alleviating the remorse of their consciences and for freely satisfying their passions.

These mental disorders which appear opposed to one another – one leading people to believe easily what is obscure and uncertain, the other to doubt what is clear and certain – nevertheless arise from the same principle, namely a failure to make oneself attentive enough to discern the truth. Obviously they must be remedied in the same way, and the only guaranteed method is to pay strict attention to our judgments and thoughts. This is the only thing which is absolutely necessary to protect ourselves against being taken by surprise. For the Academics' view – that it is as impossible to find the truth if one has no marks of it, as it would be to recognize a fugitive slave for whom one was searching if there were no signs to distinguish him [20] from others in case one encountered him – is only a vain subtlety. Just as no other marks are needed to distinguish light from darkness except the light itself which makes itself sensed sufficiently, so no marks are necessary to recognize the truth but the very brightness which surrounds it and to which the mind submits, persuading it in spite of itself. Accordingly, all these philosophers' arguments can no more prevent the soul from surrendering to the truth whenever it is strongly penetrated by it, than they can prevent the eyes from seeing when they are open and struck by sunlight.

But because the mind sometimes lets itself be misled by false glimmers when it does not pay enough attention, and because clearly some things are known only by long and difficult examination, it would certainly be useful to have rules for conducting oneself so as to make the search for truth both easier and surer.

[2] *Essays*, Bk II, ch. 12, *Complete Works*, p. 422. The Academics were leaders of Plato's Academy in the third century BC, among them Arcesilaus (c. 315–240 BC), who took to heart Socrates' remark: "All that I know is that I know nothing." The most influential Academic was Carneades (213–128 BC), who attacked the Stoic view that there are cataleptic impressions, that is, mental states that are indubitable and compel assent. The Academics argued that there was no sure criterion distinguishing true from false impressions, although they admitted that some beliefs were more probable than others. By contrast, the Pyrrhonists claimed that there was no basis for distinguishing even the probable from the improbable. Tracing their origins to Pyrrho of Elis (c. 360–c. 270 BC), they argued that every possible criterion of knowledge was open to question, and hence the only reasonable attitude was to suspend judgment on the nature of reality in order to attain *ataraxia*, a state of mental tranquillity. These arguments are presented most fully in the *Outlines of Pyrrhonism* of Sextus Empiricus (c. 150–250 AD).

Moreover, these rules are doubtless not impossible to find. After all, people are sometimes mistaken and sometimes not mistaken in their judgments, they reason well at times and badly at others, and when they reason badly they can recognize their mistakes. By reflecting on their thoughts, they can notice which method they used when they were reasoning well and which was the cause of error when they were mistaken. They can then form rules based on these reflections to avoid being caught off guard in the future.

This is properly speaking what philosophers engage in, which is the basis of their magnificent promises to us. Were we to believe them, they provide us in the branch of philosophy meant to serve this purpose, which they call logic, a light capable of dissipating all the darkness of the mind. They would correct all the errors in our thoughts and give us rules so sure that they lead infallibly to the truth, and so necessary, taken together, that without them it is impossible to know it with complete certainty. Such are the praises philosophers themselves bestow on their precepts. But if we consider what experience shows about how philosophers have used these rules, in logic as well as other branches of philosophy, there are plenty of grounds for suspecting those promises to be empty.

Nevertheless, because it is not right to reject absolutely [21] what is good in logic because of the ways it can be misused, and since it is not likely that so many great minds who devoted themselves with such care to the rules of reasoning could have found nothing worthwhile, and, finally, because custom has introduced a certain need to know what logic is, at least in a rough way, we thought it would be generally useful to take from it what is most helpful for educating our judgment. This is properly speaking the plan proposed in this work, along with several new reflections that came to mind while we were writing, which make up the largest and perhaps the most valuable part.

For it seems that ordinary philosophers hardly ever apply themselves to logic except to give rules of good and bad reasoning. Now we cannot say that these rules are useless, since they are sometimes helpful for revealing flaws in certain confused arguments and for arranging our thoughts in a more convincing manner. We should not, however, also believe that this usefulness extends much further, given that most human errors consist not in letting oneself be deceived by faulty inferences, but in granting false judgments from which mistaken conclusions are inferred.[3] Until now those who have treated logic have rarely tried to remedy this. So this is the main topic of the new reflections which will be found throughout this book.

We must acknowledge, however, that the reflections we call new because they do not appear in typical logic books, are not completely due to the author of this work,

[3] The notion that the attentive thinker cannot make mistaken inferences, but that faulty reasoning generally consists in accepting false premises, is an important part of Descartes' theory of error and his criticism of syllogistic reasoning as circular reasoning. See Rules Two and Ten of *Rules for the Direction of the Mind*, *Philosophical Writings*, vol. 1, pp. 12, 36–7.

consideration. For once we decided that a method could be useful for educating judgment, we paid little attention to the science to which it belonged. Knowledge can be organized as freely as letters in a printer's shop. Each of us has the right to form different orders according to our needs, although in forming them we ought to arrange them in the most natural manner. It is enough for some material to be useful for us to use it, and to view it not as alien but as appropriate. This is why a number of things are found here from physics and morals, and almost as much metaphysics as one ought to know, although we do not claim not to have borrowed from anyone. Everything that is useful to logic belongs to it. It is thoroughly ridiculous to subject oneself to the torments certain otherwise very capable authors put themselves through, such as Ramus and the Ramists,[10] who take as much trouble to mark the jurisdiction of each science and ensure that one does not infringe on another, as is taken in marking the boundaries of kingdoms and settling the sovereignty of parliaments.

What also convinced us to leave these Scholastic topics out entirely is not merely that they are difficult and of little use; we have treated several topics of this nature. But since they have all these bad qualities, we thought we could avoid mentioning them without offending anyone, because no one cares about them.

An important distinction must be drawn among the useless questions that fill philosophy books. Some are scorned even by those who discuss them while, on the other hand, others are famous and well thought of, and are very popular in the writings of otherwise admirable persons.

It seems we have a duty with respect [25] to these common and well-known views, however false we believe them, not to ignore what is said about them. We owe this civility, or rather this justice, not to their falsity, because it certainly does not deserve it, but to the persons who are so taken by these views, so as not to reject what they value without examining it. So by taking the trouble to study these topics, we can reasonably purchase the right to hold them in contempt.

But we have more freedom with the first kind of question, and the topics in logic that we decided to omit are of this sort. They have the advantage of not being highly regarded, not only in the world where they are unknown, but even by those who teach them. No one, thank heavens, is interested in the universal *à parte rei*, beings of reason, or second intentions. Thus we had no grounds to fear that anyone would be offended if we did not mention them. Besides, these matters are so inappropriate to being expressed in French that they would have been more suitable for disparaging Scholastic philosophy than for making it admired.

We should also warn that we exempted ourselves from always strictly following

[10] Pierre de la Ramée (1515–72), better known under his Latin name Petrus Ramus, was a French humanist, mathematician, and philosopher. More familiar today to historians of rhetoric, he was hostile to the Scholastic tradition and wrote two works against Aristotle which earned him the opposition of the Sorbonne. Nevertheless, he became the first Professor of Mathematics of the Collège Royal (Collège de France). Among his mathematical works, his treatment of negative numbers deserves mention.

the rules of method, since we put many things in Part IV which could have been discussed in Parts II and III. But we did this on purpose[c] because we thought it useful to see everything required for perfecting knowledge in one place, which is the main point of the work on method treated in Part IV. This is why we reserved the discussion of axioms and demonstrations for that section.

These are nearly all the aims we had in creating this *Logic*. Even with all this perhaps few persons will profit from it or recognize the benefits they will derive from it, because people usually pay less explicit attention to putting rules into practice. But still we hope that those who read it with some care might take a tincture of it, making them more precise and reliable in their judgments without their even being aware of it, just as certain remedies cure diseases by increasing vigor and strengthening the parts of the body. In any case, at least [26] no one will be inconvenienced for long, since anyone who is even slightly advanced can read and understand it in seven or eight days. Because it contains a great variety of topics, it is difficult to believe that not everyone will find some compensation for the trouble of reading it.

[c] ... purpose, as much because we thought it useful to see everything required for perfecting knowledge in one place, as because we thought there would be many persons who could be satisfied with the first and last parts of this work, since there are few things in the other two parts that good sense could not supply, without having to make a special study of them. – These are ... .(1)

Second discourse

Containing a reply to the principal objections made to this logic

All who share their work with the public should be reconciled to having as many judges as readers, and this should appear neither unjust nor onerous. For genuinely disinterested authors give up rights of ownership in publishing their writings, and they will thenceforth consider them with the same indifference they bring to the works of others.

Authors can reserve for themselves only the right to correct whatever is defective, for which various criticisms of books are extremely helpful. They are always useful when they are fair, and they cause no harm when they are unfair because one may ignore them.

Prudence will have it, however, that we occasionally accommodate ourselves to criticisms that do not seem fair, because even if they do not show that what is faulted is bad, they at least show that it is not congenial to the minds of those who criticize it. Now it is doubtless better, whenever we can do it without falling into some greater difficulty, to try to be so just that in satisfying judicious persons we do not displease those who have less precise judgment, since we should not assume that we will have only capable and intelligent readers.

So it would be desirable to view the first editions of books as first drafts which their authors present to educated persons to learn their opinions. Afterwards, based on the different [27] views expressed in these different opinions, they should rewrite everything to make their works as excellent as possible.

This is the course we would like to have followed in the second edition of this logic, had we learned more from the world about the first edition. Nevertheless, we did what we could: we added, deleted, and corrected several things, following the advice of those who were good enough to tell us what ought to be revised.

First, as for the language, we followed almost to the letter the advice of two persons[1] who took the trouble to note some errors which slid in through carelessness, as well as certain expressions they thought were not good usage. We excused ourselves from following their views only when, after consulting others, we found opinion divided. In that case we believed it was permissible to do as we liked.

With respect to the content, there are more additions than changes or deletions, because we had less advice about what was being criticized. It is true, however, that we know of several general objections to this book that we thought we could ignore, because we were convinced that even those who made them would be easily

[1] This has traditionally been taken to refer to de Sacy and Lancelot. Isaac Le Maistre de Sacy (1613–84) was the son of Isaac Le Maistre and Catherine Arnauld, the sister of Antoine Arnauld; he became a priest and a *solitaire* of Port-Royal. Claude Lancelot (1615–95) was a French grammarian and a Port-Royal Jansenist, and co-author with Arnauld of the *Port-Royal Grammar* (1660); he was one of the founders of the Little Schools of Port-Royal, and an educator of the Duke of Chevreuse and the two Princes of Conti from 1669 to 1672.

satisfied if we explained the reasons for the things they criticized. This is why it will be useful to reply to their main objections here.

Some people were offended by the title, *The Art of Thinking*, which they would have replaced by *The Art of Reasoning Well*. But we ask them to consider that since the purpose of logic is to give rules for all actions of the mind, and for simple ideas as well as for judgments and inferences, there is practically no other word which covers all these different acts. Certainly "thinking" includes all of them, for simple ideas are thoughts, judgments are thoughts, and inferences are thoughts. It is true that we could have said *The Art of Thinking Well*, but this addition was not necessary, being sufficiently indicated by the word *Art* which in itself signifies a method of doing something well, as Aristotle himself remarks.[2] This is why we say the art of painting and the art of counting, because we assume that no art is needed to paint or count badly.

A more important objection was raised against [28] the large number of examples from different sciences included in this logic. Since this objection attacks the entire plan and so gives us an opportunity to explain it, we should examine the objection more closely. To what purpose, they say, this patchwork of rhetoric, ethics, physics, metaphysics, and geometry? When we think we are dealing with precepts of logic, all of a sudden the authors carry us off into the loftiest sciences without knowing whether we have learned them. Should they not assume, to the contrary, that if we already had all this knowledge we would not need this logic? Would it not be better to give us a pure and simple logic text which explains the rules by everyday examples rather than one complicated by all this material that smothers them?

But anyone who reasons this way has not taken into consideration that a book can hardly have a greater fault than not being read, since it is useful only to those who read it. So everything that contributes to a book's readability also contributes to its usefulness. Now it is certain that if we had followed their thinking and had produced a completely dry logic text with the usual examples of animals and horses, however exact and methodical it might have been, it would only have added to the many texts filling the world which are never read. On the contrary, it is just this collection of different examples that has given some vogue to this logic and causes it to be read with a bit less irritation than others.

Attracting the world to read this text by making it more amusing than the usual logic book was not, however, the main point of this assortment of examples. We claim, in addition, to have followed the most natural and advantageous path in treating this art, by remedying as much as possible a drawback that can make its study useless.

For experience shows that of a thousand young persons who learn logic, there are not ten who know anything about it six months after they have finished the

[2] *Nicomachean Ethics*, Bk 1, ch. 1, *Complete Works*, vol. 2, p. 1729.

course. Now it seems that the real cause of this widespread forgetfulness or neglect is that all the material treated in logic, which is itself quite abstract and removed from practical matters, is on top of that combined with uninteresting examples that are never discussed elsewhere. So, grasping these subjects only with difficulty, the mind has no basis for retaining them, and easily loses hold of its ideas of them because they are never reinforced by practice. [29]

In addition, since the usual examples do not make the usefulness of this art clear, students are accustomed to thinking of logic in narrow terms, without seeing its larger implications. In fact it exists only to serve as an instrument for other sciences. So because students have never seen it put into practice, they do not use it themselves and are quite happy to dismiss it as trivial and worthless learning.

Thus we thought that the best remedy for this problem was not to separate logic from the other sciences for which it is intended, as is usually done, but to combine it with established knowledge by means of examples so that the rules and the practice can be seen simultaneously. In this way we might learn to evaluate the sciences through logic and retain the logic by means of the sciences.

So rather than stifling these precepts, nothing is better for making them understood and retained than all these examples. The rules alone are too subtle to make an impression on the mind if they are not combined with something more pleasing and obvious.

To make this assortment more useful, we did not borrow examples from the sciences at random. Instead we selected the most important points that could best serve as rules and principles for finding the truth in other matters we could not discuss here.

For example, we thought that rhetoric is not very helpful for finding thoughts, expressions, and embellishments. The mind furnishes enough thoughts, and usage provides the expressions. And usually there are too many metaphors and figures of speech. So the main idea is to avoid certain bad styles of writing and speaking, and above all the artificial rhetorical style made up of false and exaggerated thoughts and forced metaphors, which is the worst vice. Now the reader may find in this logic as many useful points for recognizing and avoiding these defects as in books dedicated to the subject. The last chapter of Part I, on metaphorical style, also teaches how to use it, and explains the real rule for distinguishing good from bad metaphors. The chapter treating Topics in general could be very helpful for eliminating an excess of common thoughts. By teaching never to take for beautiful what is false, the section [30] discussing arguments where reason is sacrificed to eloquence presents in passing one of the most important rules of true rhetoric. More than any other it can educate the mind to a simple, natural, and judicious way of writing. Finally, in the same chapter, what we say about how to avoid offending the reader warns against many faults that are even more dangerous, being harder to detect.

Our main subject did not permit us to include very much about ethics. I believe,

who are so famous that everyone is in some way required to know them, including their faults.

Now Aristotle supplies all this perfectly. Nothing is more effective in helping us avoid a mistake than to be shown that such a great mind made it. Moreover, due to the great number of respectable persons who have embraced his philosophy, it has become so famous that one ought to know it even to the extent of knowing its defects. Thus, since we thought it would be very useful for those who read this book to learn, in passing, various aspects of his philosophy, and since, however, it [33] is never good to be mistaken, we discussed these examples to make them known, and we indicated their defects while on the subject, to prevent others from making the same mistakes.

So it was not to discredit Aristotle but, on the contrary, to honor him as much as possible where we did not share his views, that we took examples from his books. Besides, it is obvious that the points we criticized are not very important and do not get at the heart of his philosophy, which we had no intention of attacking.

If we did not similarly discuss the many excellent things found in Aristotle's works, it is because they were not relevant to the discussion. But had we found the opportunity, we would gladly have done so, and we would not have failed to give him the praise he justly deserves. For it is certain that Aristotle is truly a thinker of extraordinary vastness and scope, who develops many of the implications and consequences of the views he discusses. This is why what he says about the passions in the second book of the *Rhetoric* is so brilliant.

There are also several fine things in his *Politics* and *Ethics*, in the *Problems* and the history of animals. Whatever confusion there is in his *Analytics*, still we must admit that nearly everything we know about the rules of logic comes from there. Indeed there is no author from whom we borrowed more for this *Logic* than Aristotle, since the body of precepts belongs to him.

It is true that the least perfect of his works seems to be the *Physics*, and it was also the one condemned and forbidden by the Church for the longest time,[4] as a learned man has shown in a book intended for this purpose.[5] Yet its main defect is not that it is false, but, on the contrary, that it is too true and teaches us only things of which we cannot be ignorant. Who can doubt that everything is composed of matter and a certain form of this matter? Who can doubt that in order for matter to

experimental approach, which led to important discoveries in physiological chemistry, medicine, and the chemistry of gases, including the discovery of carbon dioxide. Philippus Aureolus Theophrastus Bombastus von Hohenheim, known as Paracelsus, (c. 1493–1541) was a Swiss physician and alchemist. He caused a scandal at Basel by criticizing the theories of Galen and Avicenna. His medical theory was based on the ancient faculty psychology and the alchemical and astrological idea of a correspondence between the different parts of the human body (microcosm) and those of the universe as a whole (macrocosm). He nevertheless contributed to the development of chemistry and perhaps homeopathy.

4 Aristotle's physics, accompanied by his metaphysics, was condemned by the Council of Paris which met in 1209 or 1210, under the papacy of Innocent III and the reign of Philippe Auguste.

5 This refers to Jean de Launoy (1603–78), *De Varia Aristotelis Fortuna in Academia Parisiensi.*

acquire a new manner and form, it must not have had it previously, that is, it must have had its privation? Who can doubt, finally, based on these other metaphysical principles, that everything depends on the form, that matter alone does nothing, that there are places, motions, qualities, and faculties? But after having learned all these things, we seem not to have learned anything new, nor to be in a better position to make sense of any of the effects of nature. [34]

Were someone to claim that it is absolutely forbidden to declare oneself opposed to Aristotelian views, it would be easy to show him that this scrupulosity is unreasonable.

Surely if some philosophers are owed deference, it can only be for two reasons: either because they advocate the truth, or because some people approve of them.

From the standpoint of truth, we owe them respect whenever they are right, but the truth cannot oblige us to respect falsity, regardless of where it is found.

As for the consensus of those who approve of a philosopher, certainly it too deserves some respect, and it would be unwise to offend it without taking great precautions. This is because in attacking received opinions we cause others to suspect us of presuming to think ourselves more enlightened than they are.

But when the world is divided over an author's views, and when there are important persons on both sides of the issue, we no longer need to be so reserved. We can freely declare what we do or do not accept in books about which learned persons disagree. This is not so much to prefer our own view to that of the author and those who accept it, as to take the side of those who oppose it on this point.

Strictly speaking, this is the state of Aristotle's philosophy today. It has had various fortunes, having been generally rejected at one time and generally accepted at another; now it is reduced to a state between these two extremes. It is defended by several learned persons and attacked by others who are equally reputable. Every day in France, Flanders, England, Germany, and Holland, people write freely for and against Aristotle's philosophy. The conferences in Paris are as divided as the books, and no one is offended if someone declares himself against him. The most famous professors are no longer bound to the slavishness of blindly accepting everything found in his books. Some of his opinions are even generally abandoned. What physician wants to maintain these days that the nerves come from the heart, as Aristotle thought,[6] since anatomy shows clearly [35] that they originate in the brain? As Saint Augustine said: *qui ex puncto cerebri et quasi centro sensus omnes quinaria distributione diffudit.*[7] [[God] diffuses all five senses from a somewhat central point of the brain.] And what philosopher is so stubborn as to say that the speed of heavy things increases proportionally to their weight? Anyone can disabuse himself of this opinion of Aristotle's[8] by letting two things unequal in weight fall from a high place, where we see only a very slight inequality in speed.

6 *The History of Animals*, Bk III, ch. 5, *Complete Works*, vol. 1. p. 818.
7 *Letters*, Letter no. 137, ch. 2, *Writings*, vol. 11, p. 24.
8 *On the Heavens*, Bk III, ch. 2, *Complete Works*, vol. 1, pp. 493–4.

Violent states do not usually last long, and all extremes are violent.[9] It is too hard to condemn Aristotle's philosophy generally, as was done formerly, and it is a great discomfort to think ourselves obliged to accept it completely and take it for the standard of truth in philosophy, as people apparently thought subsequently. The world cannot remain under this constraint for long. Imperceptibly it takes possession of the natural and reasonable liberty that consists in accepting what is thought to be true and rejecting what is thought to be false.

Reason does not find it strange to be subjected to authority in the sciences that treat matters that transcend reason, which ought to follow another light, namely divine authority. But in human sciences that profess to rely only on reason, it seems reason would be justified in not submitting to an authority against reason.

This is the rule we followed in speaking of the views of ancient as well as contemporary philosophers. In both cases we took into consideration only the truth, generally without espousing the opinions of anyone in particular and, equally generally, without declaring ourselves against anyone.

Given this, all anyone ought to conclude when we reject an opinion of Aristotle or some other philosopher is that we do not share that author's view on that matter. But certainly no one should conclude that we do not share his view on other matters, much less that we have some aversion to him or some desire to discredit him. We think all fair-minded persons will approve of this attitude, and they will recognize in the whole of this work only a sincere desire to contribute to the common good, as much as a book of this nature can, without any passion against anyone. [37]

[9] This is an indirect reference to Aristotle's theory of motion, which distinguishes between natural and violent motions. The cause of the former is internal to objects, and returns them to their natural places. The latter are caused externally, and move objects from their natural places.

LOGIC OR THE ART OF THINKING

Logic is the art of conducting reason well in knowing things, as much to instruct ourselves about them as to instruct others.

This art consists in reflections that have been made on the four principal operations of the mind: *conceiving, judging, reasoning,* and *ordering.*

The simple view we have of things that present themselves to the mind is called *conceiving*, as when we represent to ourselves a sun, an earth, a tree, a circle, a square, thought, and being, without forming any explicit judgment about them. The form by which we represent these things is called an *idea.*

Judging is the action in which the mind, bringing together different ideas, affirms of one that it is the other, or denies of one that it is the other. This occurs when, for example, having the idea of the earth and the idea of round, I affirm or deny of the earth that it is round.

The action of the mind in which it forms a judgment from several others is called *reasoning*. So, after judging that true virtue should be attributed to God, and that the pagans' virtue was not attributed to him, from this we conclude that the pagans' virtue was not true virtue. [38]

Here we call *ordering* the mental action in which different ideas, judgments, and reasonings are arranged on the same subject, such as the human body, in the manner best suited for knowing the subject. This is also called *method.*

All this is done naturally and sometimes better by those who have never studied any rules of logic than by those who have.

Thus this art does not consist in finding the means to perform these operations, since nature alone furnishes them in giving us reason, but in reflecting on what nature makes us do, which serves three purposes.

The first is to assure us that we are using reason well, since thinking about the rule makes us pay new attention to it.

The second is to reveal and explain more easily the errors or defects that can occur in mental operations. For we frequently discover by the natural light of reason alone that some reasoning is fallacious without, however, knowing why it is so, just as people who do not know painting can be offended by the defect in a canvas without being able to explain what it is that offends them.

The third purpose is to make us better acquainted with the nature of the mind by reflecting on its actions. This is more excellent in itself, considering the case of pure speculation alone, than knowing all about corporeal things, which are infinitely lower than spiritual things.

If reflections on our thoughts never concerned anyone but ourselves, it would be enough to examine them in themselves, unclothed in words or other signs. But because we can make our thoughts known to others only by accompanying them with external signs, and since this habit is so strong that even when we think to ourselves, things are presented to the mind only in the words in which we usually

clothe them in speaking to others, logic must examine how ideas are joined to words and words to ideas.

From all we have just said it follows that logic can be divided into four parts, according to the different reflections that can be made on these four operations of the mind. [39]

imagining. But if I wish to think of a figure of a thousand angles, I certainly conceive the truth that it is a figure composed of a thousand sides as easily as I conceive that a triangle is a figure composed of only three sides. But I cannot imagine the thousand sides of that figure nor, so to speak, regard them as present before the mind's eye.[2]

It is true, however, that our habit of using the imagination when we think of corporeal things often causes us, in conceiving a figure of a thousand angles, to represent some figure confusedly. But obviously the figure thereby represented in the imagination cannot be a figure of a thousand angles, since it is no different from what I would represent if I were thinking of a figure of ten thousand angles, and it is no aid to discovering the properties that differentiate between a figure of a thousand angles and any other polygon.

Strictly speaking, then, I cannot imagine a figure of a thousand angles, since any image I might try to form of it in my imagination could as easily represent another figure of a great many angles as one of a thousand angles. Nevertheless, I can conceive it very clearly and distinctly, since [41] I can demonstrate all its properties, such as that all its angles taken together are equal to 1996 right angles. Consequently imagining is one thing and conceiving is another.

This becomes even clearer when we consider several things we conceive very clearly although they certainly cannot be imagined. For what do we conceive more clearly than our thought when we are thinking? Yet it is impossible to imagine a thought or to form an image of it in the brain. "Yes" and "No" also have no images: someone who judges that the earth is round and someone who judges that it is not round both have the same things depicted in the brain, namely the earth and roundness, but the first person adds an affirmation to them, an action the mind conceives without any corporeal image, and the other adds the contrary action, negation, which allows even less of an image.

Whenever we speak of ideas, then, we are not referring to images painted in the fantasy, but to anything in the mind when we can truthfully say that we are conceiving something, however we conceive it.

It follows that we can express nothing by our words when we understand what we are saying unless, by the same token, it were certain that we had in us the idea of the thing we were signifying by our words, although this idea is at times more clear and distinct, and at others more obscure and confused, as we shall explain below.[3] For there would be a contradiction in maintaining that I know what I am saying in uttering a word, and yet that I am conceiving nothing in uttering it except the sound itself of the word.

This allows us to see the falsity of two very dangerous views that have recently been advanced by philosophers.

[2] This example is borrowed from Descartes. See Sixth Meditation, *Philosophical Writings*, vol. 2, pp. 50–1.

[3] Cf. Descartes to Mersenne, July 1641, *Philosophical Writings*, vol. 3, p. 185.

The first is that we have no idea of God.[4] For if we had no idea of God, in uttering the name "God" we would conceive only these three letters, "G," "o," "d."[a] And a Frenchman would have nothing more in his mind on hearing the name *Dieu* than when, in entering a synagogue and being entirely ignorant of Hebrew, he heard *Adonai* or *Elohim* uttered in Hebrew.

Moreover, when men such as Caligula and Domitian called themselves God, they would not have committed any impiety since there [42] is nothing in these letters or the two syllables *Deus* which could not be attributed to a man if no idea were connected to them. This is why a Dutchman could not be accused of impiety for calling himself *Ludovicus Dieu*.[5] What, then, did the impiety of these princes consist in if not that, retaining at least part of the idea in the word *Deus*, such as having an excellent nature worthy of adoration, they appropriated the name with this idea for themselves?

If we had no idea of God, on what could we base everything we say about God, such as that there is only one, that he is eternal, all powerful, all good, all wise? None of this is contained in the sound "God," but only in the idea of God connected to this sound.

This is also the only reason we refuse to give the name "God" to all the false divinities. It is not because this word taken materially could not be attributed to them, since the pagans in fact did so, but because the idea of a sovereign being connected by usage to this word "God" conforms only to the one true God.

The second of these false views is maintained by an Englishman: "that reasoning is simply joining together and linking names by the word 'is.' It would follow that in reasoning our inferences do not touch the nature of things, but merely their labels; that is, we simply see whether we are combining the names of things well or badly according to the arbitrary conventions we have laid down concerning their meaning."

To which that author adds: "If this is so, as may well be the case, reasoning will depend on words, words on the imagination, and the imagination will depend, as I believe it does, on the motions of bodily organs; and so the mind will be nothing more than motion occurring in various parts of an organic body."[6]

We have to believe that these words express an objection far removed from their author's real opinion. But since, taken literally, they would deny the immortality of the soul, it is important to make their falsity evident, which will not be difficult. For the conventions this philosopher mentions could be nothing but agreements we have made to take certain sounds as signs of ideas in the mind. So if we did not have ideas of things in addition to these names, [43] these conventions would have

4 Cf. Hobbes, *Third Set of Objections to Descartes' Meditations* and Gassendi, *Fifth Set of Objections to Descartes' Meditations*, *Philosophical Writings*, vol. 2, pp. 127, 199–200.

5 This refers to the Protestant minister, Louis de Dieu (1590–1642).

6 Cf. Hobbes, *Third Set of Objections to Descartes' Meditations*, *Philosophical Writings*, vol. 2, pp. 125–6.

a The French text reads: "si nous n'en avions aucune idée, en prononçant le nom de Dieu, nous n'en concevrions que ces quatres lettres D, i, e, u . . ."

been impossible, just as it is impossible to make blind people understand what the words "red," "green," and "blue" mean by any convention because, lacking these ideas altogether, they cannot connect them to any sounds.

Furthermore, because different nations have given different names to things, even to the clearest and simplest, such as the objects of geometry, they could not make the same inferences about the same truths if reasoning were merely connecting names by the word "is."

Moreover, as it appears from their different vocabularies that the Arabs, for example, do not give the same meanings to sounds as the French, likewise they could not agree in their judgments and inferences if reasoning depended on this convention.

Finally, there is a considerable equivocation in this word "arbitrary" when it is said that the meaning of words is arbitrary. For it is true that it is purely arbitrary to connect a certain idea to one particular sound rather than another. But ideas – at least those that are clear and distinct – are not at all arbitrary things depending on our fancy. This is shown by the absurdity of imagining that very real effects could depend on purely arbitrary things. Now when someone has concluded by reasoning that the iron axle that goes through two grindstones of a mill could turn without making the one below turn if, being round, it went through a round hole; but that it could not turn without making the one above turn if, being square, it were embedded in a square hole in the upper stone, the claimed effect follows infallibly. Consequently reasoning is not a collection of names according to a convention depending entirely on human fancy, but a solid and practical judgment about the nature of things by considering ideas in the mind that people chose to mark by certain names.

Thus it is sufficiently clear what we mean by the word "idea." It remains only to say a word about the origin of our ideas.

The issue comes down to whether all our ideas come from the senses, and whether this common maxim should be considered true: *Nihil est in intellectu quod non prius fuerit in sensu.*[7] [Nothing is in the intellect which was not previously in the senses.]

This is the opinion of a widely admired philosopher, [44] who begins his logic with this proposition: *Omnis idea orsum ducit à sensibus.* Every idea originates in the senses.[8] He admits, however, that not all our ideas exist in the mind exactly as they were in the senses, but he claims that at least they are formed from those which passed through the senses. This happens either by composition, as when we form a golden mountain from separate images of gold and a mountain; or by amplification and diminution, when we form a giant or a pygmy from the image of a person of

[7] Cited by Etienne Gilson, *Index scolastico-cartésien* (Paris, Alcan), 1913, p. 203, as an extract from *Eustachio a Sancto Paulo, Summa philosophica quadripartita*, 1st ed., vol. 3, pp. 427–9.

[8] Gassendi, *Institutio Logica*, Canon II, p. 84. See also Canon III: "Every idea either comes through the senses, or is formed from those which come through the senses." Cf. p. 85. (Clair and Girbal attribute this text to the English mathematician and logician, John Wallis.)

appear false to us whenever they conflict with this idea. For we are naturally led to believe that our judgments are false when we see clearly that they are contrary to our ideas of things. Thus we could not judge with certainty that God has no parts, that he is incorporeal, that he is everywhere, and that he is invisible, since none of this agrees with the idea of a venerable old man. That God is sometimes represented under this form does not imply that this is the idea we ought [46] to have of him. For it would also follow that we had no other idea of the Holy Ghost than that of a dove, because he is represented under the form of a dove, and that we conceive God as a sound because the sound of the name "God" awakens the idea of him in us.

It is thus false that all our ideas originate in the senses. On the contrary, one can say that no idea in the mind originates in the senses, although motions in the brain, which is all the senses can bring about, may provide the occasion for the soul to form various ideas that might not have been formed without this occasion. Indeed, even these ideas almost never resemble what is in the senses and the brain. Furthermore, it would be absurd to attribute the many ideas that have nothing whatever to do with corporeal images to the senses.

If[d] someone objects that while we are having an idea of something mental like thought we continue to form some corporeal image, at least of the sound which signifies the idea, this in no way conflicts with what has been proved. For the image of the sound of the thought we imagine is not the image of the thought itself, but only of a sound. It can make us conceive it only inasmuch as the soul, being accustomed when it conceives this sound to conceive the thought too, forms at the same time a completely mental idea of the thought. This idea has no relation to the idea of the sound, but is connected to it only by habit. This is seen in the fact that deaf people who lack images of sounds nonetheless have ideas of their thoughts, at least when they reflect on what they are thinking.

CHAPTER 2

Ideas considered according to their objects

Everything we conceive is represented to the mind either as a thing, a manner of a thing, or a modified thing. [47]

I call whatever is conceived as subsisting by itself and as the subject of everything conceived about it, a thing. It is otherwise called a substance.

I call a manner of a thing, or mode, or attribute, or quality, that which, conceived as in the thing and not able to subsist without it, determines it to be in a certain way and causes it to be so named.

I call a modified thing whatever is considered a substance determined by a certain manner or mode.

[d] This paragraph was added in II.

This will be made clearer by some examples.

When I think of a body, my idea of it represents a thing or a substance, because I consider it as a thing subsisting by itself and needing no other subject to exist.

But when I think that this body is round, the idea I have of roundness represents only a manner of being or a mode which I conceive as incapable of subsisting naturally without the body whose roundness it is.

Finally, when I join the mode to the thing and consider a round body, this idea represents a modified thing.

Nouns used to express things are called substantives or absolutes, such as "earth," "sun," "mind," "God."

Nouns that signify modes primarily and directly, such as "hardness," "heat," "justice," and "prudence," are also called substantives or absolutes because their signification has some relation to substances.

Nouns that signify things as modified, indicating the thing primarily and directly although more confusedly, and the mode indirectly although more distinctly, are called adjectives or connotatives. Examples are "round," "hard," "just," "prudent."

We should remark, however, that the mind, accustomed to knowing most things as modified since it knows them almost always by accidents or qualities that strike the senses, often divides the essence of the substance itself into two ideas, viewing one as subject and the other as mode. For example, although everything in God is God himself, this does not prevent us from conceiving him as an infinite being, regarding infinity as an attribute of God and being as the subject of this attribute. Thus a human being is often considered as the subject of humanity *habens humanitatem* [possessing humanity], and consequently as a modified thing.

In these cases the essential attribute, which is the thing itself, is taken for a mode because it is conceived as in a subject. This is [48] properly speaking an abstraction of substance, such as humanity, corporeality, and reason.

Nevertheless, it is very important to know a real mode from an apparent mode, because one of the main causes of error is confusing modes with substances and substances with modes. Thus it is the nature of a true mode that one can clearly and distinctly conceive the substance of which it is a mode without it, while not being able, conversely, to conceive the mode clearly without conceiving at the same time its relation to the substance[a] without which it could not exist naturally.

It is not impossible to conceive the mode without paying distinct and explicit attention to its subject. But the fact that we cannot deny this relation of the mode without destroying our idea of it shows that the[b] relation to the substance is included at least confusedly in the idea of the mode. On the other hand, when we conceive two things or two substances, we can deny one of the other without destroying either idea.

[a] ... substance of which it is a mode, and without ... (I)

[b] ... the notion of the relation ... (I)

CHAPTER 3

Aristotle's ten categories

We can relate this discussion of ideas according to their objects to Aristotle's ten categories, since they are only different classes to which this philosopher wanted to reduce all the objects of our thoughts, by putting all [50] substances in the first class and all accidents in the other nine. They are as follows.[1]

I. SUBSTANCE, which is either mental or corporeal, etc.

II. QUANTITY, which is called discrete when the parts are not connected, as in number, and continuous when they are connected. In the latter case they are either successive, for example in time and motion, or permanent, otherwise called space or extension in length, width, and depth. Length alone produces lines, length and width produce surfaces, and the three together produce solids.

III. QUALITY, which Aristotle divides into four kinds:

The first includes *habits*, that is, dispositions of the mind or body that are acquired by repeated acts, such as the sciences, the virtues, the vices, skill in painting or writing or dancing.

The second are *natural powers*, such as the faculties of the soul or body, for example, understanding, will, memory, the five senses, and the power to walk.

The third are *sensible qualities*, such as hardness, softness, heaviness, cold, heat, colors, sounds, odors, or different tastes.

The fourth is form or shape, which is the external determination of quantity, such as being round, square, spherical, or cubic.

IV. RELATION. Either the connection between one thing and another, such as father, son, master, servant, king, subject; or between the power and its object, such as of sight to the visible. This includes anything indicating a comparison, such as similar, equal, greater, smaller.

V. ACTIVITY. Either in itself, such as to walk, to dance, to know, or to love; or outside itself, such as to beat, to cut, to break, to illuminate, or to heat.

VI. PASSIVITY. To be beaten, to be broken, to be illuminated, to be heated.

VII. PLACE. That is, the answer to questions concerning place, such as to be in Rome, in Paris, in one's study, in bed, in one's chair.

VIII. TIME. That is, the answer to questions concerning time, such as when did he live? one hundred years ago; when did it happen? yesterday. [51]

IX. POSITION. To be seated, standing, lying down, in front of, behind, to the right, to the left.

X. STATE. That is, to have something around oneself serving as clothing, ornaments, or armor, such as to be dressed, to be crowned, to be shod, to be armed.

These are Aristotle's ten categories of which so much mystery is made,[a] although

[1] Here the authors are condensing Aristotle's list of categories, although not in the order he presents them. See *Categories*, ch. 4, *Complete Works*, vol. 1, p. 4.

[a] ... made in the Schools, and which take so long to learn, although ... (I)

to tell the truth, in themselves they are fairly useless. Not only are they hardly helpful in forming judgments, which is the goal of a true logic, but they are often harmful for two reasons which are important to note.

The first is that these categories are viewed as based on reason and truth, when in fact they are completely arbitrary, having no foundation but the imagination of one man who had no authority to prescribe laws to others. Each of us has as much right as he has to arrange the objects of our thoughts in other ways, according to our own manner of philosophizing. In fact, others have included everything in the world, viewed from the standpoint of a new philosophy, in the following couplet:

> *Mens, mensura, quies, motus, positura, figura:*
> *Sunt cum materia cunctarum exordia rerum.*[2]
> [Mind, measure, rest, motion, position, shape:
> Are with matter the beginning of all things.]

That is, these people are persuaded that all of nature can be explained by considering only these seven things or modes:

1. *Mens*, the mind or substance that thinks.
2. *Materia*, body or extended substance.
3. *Mensura*, the largeness or smallness of each part of matter.
4. *Positura*, their position with respect to each other.
5. *Figura*, their shape.
6. *Motus*, their motion.
7. *Quies*, their rest or least motion.

The second reason that makes studying the categories dangerous is that it accustoms people to be satisfied with words, and to imagine that they know everything when they know only their arbitrary labels. These do not produce any clear and distinct ideas in the mind, as we shall show elsewhere. [52]

We could also mention here the attributes of the Lullists,[3] e.g., *goodness, power, greatness, etc.* But it is so ridiculous for them to think they can explain everything by applying metaphysical words to whatever is proposed to them, that it does not even deserve to be refuted.

A contemporary author has quite reasonably said that Aristotle's rules of logic serve merely to prove what one person already knows to another, but Lull's art is useful only for producing an unreasonable discourse about something one does not know.[4] Ignorance is worth much more than this spurious knowledge, which makes us imagine that we know what we do not know at all. For, as St. Augustine wisely

[2] It appears that Regius, the author of *Fundamenta Physices* (Amsterdam, 1646), created this verse according to the Aristotelian mnemonic technique, but for the Cartesian cause.

[3] Raymond Lully (Ramon Lull) (c. 1232–1316) was a Catalan philosopher, poet, and author of the complex *Arts of Memory* which he believed would convert Moslems to Christianity. Lull maintained that every article of faith could be perfectly demonstrated by logic.

[4] Descartes, *Discourse on the Method*, Pt. II, *Philosophical Writings*, vol. 1, p. 119.

remarks in his book on the usefulness of belief, this tendency of the mind is blameworthy for two reasons. First, he who is falsely persuaded that he knows the truth thereby makes himself incapable of learning about it. The other is that this presumption and rashness are marks of a mind which is not well formed: *Opinari, duas ob res turpissimum est: quod discere non potest qui sibi jam se scire persuasit: et per se ipsa temeritas non bene affecti animi signum est.*[5] [To be opinionated is very bad for two reasons. First, whoever has convinced himself that he already knows cannot learn. Second, the recklessness itself reveals a mind which is not well disposed.] For in the purity of the Latin tongue, the word *Opinari* signifies the tendency of a mind to consent too readily to uncertain things and thus to believe that it knows what it does not. This is why all the philosophers maintained: *Sapientem nihil opinari.* [A wise person has no opinions.] And Cicero, reproaching himself for this vice, said he was *magnus opinator* [highly opinionated].[6]

CHAPTER 4

Ideas of things and ideas of signs

When we consider an object in itself and in its own being, without carrying the view of the mind to what it can represent, our idea of it is an idea of a thing, such as the idea of the earth [53] or the sun. But when we view a certain object merely as representing another, our idea of it is an idea of a sign, and the first object is called a sign.[1] This is how we ordinarily think of maps and paintings. Consequently the sign includes two ideas, one of the thing which represents, the other of the thing represented. Its nature consists in prompting the second by the first.

Signs can be classified in various ways, but we will content ourselves here with three which are the most useful.

First, there are certain signs, which in Greek are called τεχμήρια, as breathing is a sign of life in animals. And there are signs that are only probable, which are called σημεῖα in Greek, as pallor is only a probable sign of pregnancy in women.[2]

Most hasty judgments arise from confusing these two types of signs, and attributing an effect to a particular cause, even though it could also arise from other causes, and hence is only a probable sign of that cause.

Second, there are signs joined to things. For example, facial expressions, which are signs of movements in the soul, are joined to the emotions they signify; symptoms, signs of diseases, are joined to these diseases; and to use some nobler examples, as the ark, the sign of the Church, was joined to Noah and his children,

5 *The Advantage of Believing*, ch. 11, *Writings*, vol. 2, p. 425.
6 *Academica*, Bk II, ch. 20, *De Natura Deorum, Academica*, p. 551.
1 St. Augustine, *On Christian Instruction*, Bk. II, ch. 1, *Writings*, vol. 4, p. 61.
2 Aristotle, *Prior Analytics*, Bk. II, ch. 27, *Complete Works*, vol. 1, p. 112.

on human fancy, as an image that appears in a mirror is a natural sign of what it represents, and others that are only instituted or conventional, whether they bear some distant relation to the thing symbolized or none at all.[4] Thus words are conventional signs of thoughts, and characters are conventional signs of words. In discussing propositions we shall explain an important truth about this sort of sign, namely that on some occasions the things signified can be affirmed of the signs. [55]

CHAPTER 5

Ideas considered according to their composition or simplicity, including a discussion of knowledge by abstraction or specification

The remark we made in passing in chapter 2, that it is possible to consider a mode without reflecting distinctly on the substance of which it is a mode, provides an opportunity to explain what are called *abstractions of the mind.*

Because of its small scope, the mind cannot perfectly understand things that are even slightly composite unless it considers them a part at a time, as if by the different faces they can assume. This is generally called knowing by abstraction.

But there are different kinds of composition. Some things are composed of really distinct parts, called integral parts, such as the human body and different parts of a number. In this case it is quite easy to conceive how the mind can be applied so as to consider one part independently of another, because the parts are really distinct. This is not what we mean by "abstraction."

Now in these same cases, it is so useful to consider the parts separately rather than the whole that without it we would have almost no distinct knowledge. How could we know the human body, for example, except by dividing it into all its similar and dissimilar parts and giving them different names? All arithmetic is also based on this. No skill is needed to calculate small numbers because the mind can grasp them in their entirety. The art consists entirely in calculating by parts what cannot be calculated as wholes. For example, it would be impossible, whatever the scope of one's mind, to multiply two numbers of eight or nine digits each, taken as wholes.

The second kind of knowledge by parts arises when we consider a mode without paying attention to its substance, or two modes which [56] are joined together in the same substance, taking each one separately. This is what geometers do who take the object of their science to be the body extended in length, width, and depth. In order to know it better they first consider it according to a single dimension, namely length, which they call a line. Next they consider it according to two dimensions, length and width, which they call a surface. And finally, considering all three dimensions together, length, width, and depth, they call it a solid or a body.

[4] St. Augustine, *On Christian Instruction*, Bk. II, ch. 1, *Writings*, vol. 4, pp. 61–2.

This shows how ridiculous is the argument of some skeptics who try to call into question the certainty of geometry, on the grounds that it presupposes lines and surfaces which are not found in nature. For geometers by no means assume that there are lines without width or surfaces without depth. They only think that it is possible to consider the length without paying attention to the width. This is indubitable, just as when, in measuring the distance from one city to another, we measure only the length of a path without bothering about its width.

Now the more we can separate the different modes of things, the more easily the mind can know them. It is obvious, for example, that no clear account of reflection and refraction was possible until the analysis of motion distinguished its determination in a particular direction from the motion itself, and even separated various aspects within this determination. Given these distinctions, the account follows easily, as is seen in chapter 2 of Descartes' *Dioptrics*.[1]

The third way of conceiving things by abstraction takes place when, in the case of a single thing having different attributes, we think of one attribute without the other even though they differ only by a distinction of reason. Here is how this happens. Suppose, for example, I reflect that I am thinking, and, in consequence, that I am the I who thinks. In my idea of the I who thinks, I can consider a thinking thing without noticing that it is I, although in me the I and the one who thinks are one and the same thing. The idea I thereby conceive of a person who thinks can represent not only me but all other thinking persons. By the same token, if I draw an equilateral triangle on a piece of paper, and if I concentrate on examining it on this paper along with all the accidental circumstances determining it, [57] I shall have an idea of only a single triangle. But if I ignore all the particular circumstances and focus on the thought that the triangle is a figure bounded by three equal lines, the idea I form will, on the one hand, represent more clearly the equality of lines and, on the other, be able to represent all equilateral triangles. Suppose I go further and, ignoring the equality of lines, I consider it only as a figure bounded by three straight lines. I will then form an idea that can represent all kinds of triangles. If, subsequently, I do not attend to the number of lines, and I consider it only as a flat surface bounded by straight lines, the idea I form can represent all straight-lined figures. Thus I can rise by degrees to extension itself. Now in these abstractions it is clear that the lower degree includes the higher degree along with some particular determination, just as the I includes that which thinks, the equilateral triangle includes the triangle, and the triangle the straight-lined figure. But since the higher degree is less determinate, it can represent more things.

Finally, it is obvious that through these sorts of abstractions, ideas of individuals become common, and common ideas become more common. Accordingly, this gives us the opportunity to proceed to what we have to say about the universality or particularity of ideas.

[1] *Optics*, Discourse Two, *Philosophical Writings*, vol. 1, pp. 156–64.

I call the *extension* of an idea the subjects to which this idea applies. These are also called the inferiors of a general term, which is superior with respect to them. For example, the idea of a triangle in general extends to all the different species of triangles.

Although the general idea extends indistinctly to all the subjects to which it applies, that is, to all its inferiors, and the common noun signifies all of them, there is nevertheless this difference between the attributes it includes and the subjects to which it extends: none of its attributes can be removed without destroying the idea, as we have already said, whereas we can restrict its extension by applying it only to some of the subjects to which it conforms without thereby destroying it.

Now the extension of a general idea can be restricted or narrowed in two ways.

The first is by joining another distinct or determinate idea to it, as when I join the idea of having a right angle to the general idea of a triangle. Then I narrow this idea to a single species of triangle, namely the right triangle.

The other is by joining to it merely an indistinct and indeterminate idea of a part, as when I say "some triangle." In that case the common term is said to become particular because it now extends only to a part of the subjects to which it formerly extended, without, however, the part to which it is narrowed being determined.

CHAPTER 7

The five kinds of universal ideas: genus, species, difference, property, and accident

What has been said in the preceding chapters allows us to clarify briefly the five universals usually explained in the Schools. [60]

For when general ideas represent their objects as things and are indicated by terms called substantive or absolute, they are called *genus* or *species*.

The genus

An idea is called a genus when it is so common that it extends to other ideas that are also universal, as the quadrilateral is a genus with respect to the parallelogram and the trapezoid. Substance is a genus with respect to the extended substance called body and the thinking substance called mind.

The species

Common ideas that fall under a more common and general idea are called species, just as the parallelogram and the trapezoid are species of the quadrilateral, and body and mind are species of substance.

Thus the same idea can be a genus with respect to the ideas to which it extends, and a species when compared to another, more general idea. For example, body is a genus with respect to animate and inanimate bodies, and a species with respect to substance. The quadrilateral is a genus compared to the parallelogram and the trapezoid, and a species with respect to shape.

But there is another notion of the word "species" that applies only to ideas that cannot be genera. This occurs when an idea has under it only individuals and particulars, just as the circle has under it only individual circles, which are all of the same species. This is called the lowest species, *species infima*.

There is also a genus that is not a species, namely the highest of all the genera. Whether this genus is being or substance is unimportant, and is more a question for metaphysics than logic.

I have said that general ideas that represent their objects as things are called genera or species. For it is not necessary for the objects of these ideas actually to be things or substances, but it suffices for us to consider them as things. In that case even when they are modes we relate them not to their substances, but to other ideas of modes which are more or less general. Thus shape, which is only a mode with respect to a body having shape, is [61] a genus with respect to curved and straight-lined figures, etc.

By contrast, if ideas that represent their objects as modified things, and that are indicated by adjectival or connotative terms, are compared with the substances these connotative terms signify confusedly although directly, then they are called not genera or species, but *differences*, *properties*, or *accidents*. This is true whether in fact these connotative terms signify essential attributes, which are actually only the thing itself, or true modes.

These ideas are called *differences* when their object is an essential attribute distinguishing one species from another, such as extended, thinking,[a] and rational.

An idea is called a *property* when its object is an attribute actually belonging to the essence of the thing as long as it is not the primary attribute considered in the essence. These are merely attributes dependent on the primary attribute, such as divisible, immortal, and docile.

Finally, an idea is called a *common accident* when its object is a true mode which can be separated, at least by the mind, from the thing whose accident it is said to be, without destroying the idea of this thing in the mind. Examples are round, hard, just, and prudent. All this must be explained in more detail.

The difference

When a genus has two species, it is necessary for the idea of each species to include something not contained in the idea of the genus. Otherwise, if each idea included

[a] Two versions of the text are available: *pesant* = heavy, *pensant* = thinking. I have chosen *pensant* as the more likely, and the other seems to be a misprint.

only what is included in the genus, it would be merely the genus. Since the genus applies to each species, each species would apply to the other. Hence the primary essential attribute which each species includes over and above the genus is called its difference. Our idea of it is a universal idea because one and the same idea can represent this difference everywhere it is found, that is, in all the inferiors of the species.

Example. Body and mind are the two species of substance. Therefore the idea of a body must have something more in it than the idea of substance, and the same is true for the idea of a mind. Now the first additional thing we see in the body is extension, and the first additional thing we see in the mind is thought. Thus the difference of body will be extension and that of mind will be thought, [62] that is, the body will be an extended substance and the mind a thinking substance.

From this we can see, first, that the difference has two aspects, one with respect to the genus it divides and separates, the other the species it constitutes and forms, making up the principal part of the comprehension of the idea of the species. From this it follows that every species can be expressed by a single noun, such as "mind" or "body"; or by two words, namely one for the genus and one for the difference, joined together; this is called a definition, such as "thinking substance," "extended substance."

Second, it is clear that since the difference constitutes the species and distinguishes it from other species, it must have the same extension as the species. Thus they must be able to be said reciprocally of each other, for example, that everything that thinks is mind, and everything that is mind thinks.

Often, however, we can see in certain things no attribute that applies to the whole species and only that species. In those cases we join several attributes together whose combination, found only in this species, constitutes its difference. Thus the Platonists, viewing demons as well as humans as rational animals, did not consider the difference rational, reciprocal to human. This is why they added another attribute to it, such as mortal, which is also not reciprocal to human since it applies to brutes. But the two together apply only to humans. This is what we do in the ideas we form of most animals.

Finally, we should note that it is not always necessary for the two differences dividing a genus both to be positive, but it is enough if one is, just as two people are distinguished from each other if one has a burden the other lacks, although the one who does not have the burden has nothing the other one does not have. This is how humans are distinguished from brutes in general, since a human is an animal with a mind, *animal mente praeditum*, and a brute is a pure animal, *animal merum*. For the idea of a brute in general includes nothing [63] positive which is not in a human, but is joined only to the negation of what is in a human, namely the mind. So the entire difference between the idea of an animal and the idea of a brute is that the comprehension of the idea of an

mode. For example, we can easily conceive a human without conceiving prudence, but we cannot conceive prudence without conceiving either a human or another intelligent nature which is prudent.

Now when the confused and indeterminate idea of substance is joined to a distinct idea of some mode, this idea can represent everything that has the mode, as the idea of prudent represents all prudent people, and the idea of round represents all round bodies. In that case, this idea, expressed by a connotative term such as "prudent" or "round," constitutes the fifth universal, which is called an accident because it is not essential to the thing to which it is attributed. If it were essential it would be a difference or a property.

But we must remark here, as was said previously, that when two substances are considered together, one can be viewed as a mode of the other. Thus a clothed person could be considered as a whole composed of the person and the clothing. But with respect to the person, being clothed is only a mode or a manner of being under which one is considered, although the clothes are substances. This is why being clothed is only a fifth universal.

This is more than anyone needs to know about the five universals treated so extensively in the Schools. Knowing that there are genera, species, differences, properties, and accidents is not very useful. The important point is to recognize the true genera of things, the true species of each genus, their true differences, their true properties, and the accidents that apply to them. This is what we shall elucidate in the following chapters, after first saying something about complex terms. [65]

CHAPTER 8

Complex terms and their universality or particularity

Occasionally we join a term to various other terms, composing in the mind a complete idea, of which one can often affirm or deny what could not be affirmed or denied of each of these terms taken separately. For example, these are complex terms: "a prudent person," "a transparent body," "Alexander son of Philip."

This addition is sometimes made by the relative pronoun, as when I say: "a body that is transparent," "Alexander who is the son of Philip," "the Pope who is the Vicar of Jesus Christ."

Moreover, it can be said that even if the relative pronoun is not always expressed, it is in some way always implicitly understood because we can express it if we like without changing the proposition.

For it is the same thing to say "a transparent body" or "a body that is transparent."

What is more noteworthy about complex terms is that the addition made to a term is of two sorts: one can be called an *explication*, the other a *determination*.

by the word "philosopher." But with respect to Aristotle, whom the Schoolmen indicate by this term, it is complex only in meaning, since the idea of Aristotle is only in the mind without being expressed by any sound that distinguishes it in particular.

All connotative or adjectival terms either are parts of a complex term when their substantive is expressed, or are [67] complex in meaning when it is implicit. For, as we said in chapter 2, these connotative terms indicate a subject directly although more confusedly, and a form or mode indirectly although more distinctly. Hence the subject is only a very general and confused idea, sometimes of a being, sometimes of a body, which is usually determined by the distinct idea of the form joined to it. *Album* [white], for example, signifies a thing that has whiteness, which determines the confused idea of a thing to represent only those things having this quality.

What is even more remarkable about these complex terms is that some actually are determined to a single individual, but still retain a certain equivocal universality, which could be called equivocation by error. In these cases everyone has agreed that this term signifies just one unique thing, but for lack of identifying what this unique thing really is, some apply it to one thing and others to another. This means the exact signification of the term still needs to be determined, either by different circumstances or by the subsequent discourse.

Thus the words "true religion" signify but a single and unique religion, which is in fact the Catholic religion, since that is the only true one. But because each nation and each sect believes that its religion is the true religion, these words are highly equivocal in people's mouths, if only by error. If we read in a history book that a prince was zealous about the true religion, we could not know what was meant unless we knew the historian's religion. For if he were a Protestant, it would mean the Protestant religion; if he were an Arab Moslem who spoke this way about his prince, it would mean the Moslem religion; and we could judge that it was the Catholic religion only if we knew that the historian was Catholic.

Complex terms that are thus equivocal by error are primarily those containing qualities that are judged not by the senses but only by the mind, about which people can easily disagree.

If I say, for example, "Only men six feet tall were enlisted in Marius's army," this complex term "men six feet tall" would not be subject to equivocation by error, because it is very easy to measure men in order to decide whether they are six feet tall. But if it were said that one ought to enlist only valiant men, the term "valiant men" [68] would be more susceptible to equivocation by error, that is, to being attributed to men believed to be valiant who in fact were not so.

Comparative terms are also highly subject to equivocation by error: "the greatest geometer of Paris," "the most knowledgeable person," "the most adroit," "the richest," etc. For although these terms are determined by individual conditions, since there is only one person who is the greatest geometer of Paris, these words

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Antoine Arnauld and Pierre Nicole were philosophers and theologians associated with Port-Royal Abbey, a centre of the Catholic Jansenist movement in seventeenth-century France. Their enormously influential *Logic or the Art of Thinking*, which went through five editions in their lifetimes, treats topics in logic, language, theory of knowledge and metaphysics, and also articulates the response of 'heretical' Jansenist Catholicism to orthodox Catholic and Protestant views on grace, free will and the sacraments. In attempting to combine the categorical theory of the proposition with a Cartesian account of knowledge, their *Logic* represents the classical view of judgement which inspired the modern transformation in logic and semantic theory by Frege, Russell, Wittgenstein and recent philosophers. This edition presents a new translation of the text, together with a historical introduction and suggestions for further reading.

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ISBN 0-521-48394-8