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Early modern philosophy

CHARLES TALIAFERRO

The beginning of modern philosophy in Europe was prompted, in part, by the rise of modern science in the seventeenth century. Modern scientists advanced a heliocentric or sun-centered view of the cosmos in place of a geocentric or earth-centered understanding of our planetary system. Observation and experimentation were given pride of place in the investigation of nature over divine revelation in Scripture. Aristotle and other ancient authorities were challenged, and a premium was placed on mechanistic or naturalistic explanations of nature. This scientific and intellectual revolution helped generate unprecedented philosophical experimentation and fierce debate. Other contributing factors to this complex emergence of modern philosophy were the invention of the printing press, the Reformation, and the breakdown of feudalism. Modern philosophy began with an array of competing theories of nature, God, and civil society. This vibrant period in the history of ideas and culture is often referred to as ''The Enlightenment.''

This chapter on early modern conceptions of nature will cover the first stage of modern philosophy, chiefly the seventeenth and eighteenth centuries. The philosophies of nature that were advanced at that time had important ethical and social implications and they remain vital for us to address today, both for the sake of understanding European history and the histories of parts of the world affected by Europe. It is also vital in a thoroughgoing assessment of the resources available for developing and assessing our own philosophies of nature. Many contemporary theories in environmental ethics are articulated with explicit reference to Enlightenment figures. To fully engage these projects requires taking stock of the emergence of modern philosophy.

In order to appreciate the distinctive character of modern philosophy, it is desirable to consider, if only briefly, some of the salient features of the medieval world from which modern philosophy emerged.

The medieval background

The term ''medieval'' (from the Latin for ''middle'') refers to Europe between ancient and classical Greco-Roman culture on the one end and the Renaissance and modern era on the other. The medieval era was depicted by Petrarch and others as the ''Dark Ages,'' a wasteland of superstition, plague, famine, fractious feudal politics, and war, all of which came about after the collapse of the Roman Empire in the West. The medieval period – customarily charted from the fourth to the fifteenth century – did indeed have a dark side. There were crusades, widespread oppression, military strife,

and the Black Death (bubonic and pneumonic infections) in the fourteenth century in which a quarter of the population (25 million people) of Europe perished. And yet not everything was abominable. There were periods of peace and tolerance, important developments in art, literature, architecture, agriculture (for example, the cultivation of beans in the tenth century was so successful it has been called ''the century of beans''), and important philosophical and theological work was undertaken by Jewish, Christian, and Islamic thinkers. (See JUDAISM, CHRISTIANITY, and ISLAM)

A brief summary of ''the medieval world-view'' is doomed because of the rich variety of this era. Even so, some broad generalizations are worth noting. What follows covers a significant body of the medieval landscape with some privileging of the work of Thomas Aquinas (1225–1274). By the lights of many prominent scholars, medieval philosophy reached its zenith with Aquinas (Gilson 1940).

On the whole, the medieval conception of nature is theistic. Nature is a good realm made up of earth, plants, animals, humans, heavenly bodies, and supernatural beings that are created and sustained by an all-good, all-powerful, all-knowing God. Nature is not itself divine, nor is it, as the Stoics thought, a soul or animal. Nature is diverse but not self-explaining, for the very existence and all the powers of the natural world are derived from God's good power. The philosophy of God in common with Jews, Muslims, and Christians at the time is that God necessarily exists. God is not a contingent entity, for God's existence does not depend on any created being; there is no law of nature or force behind God that created God. God exists *a se* (in Godself) as a spiritual, immaterial, omnipresent being, eternal, imperishable, incorruptible, and without origin or end. In this theological-philosophical system, the creation is recognized as real and a fitting object of care and pleasure, but God is recognized as the most real being (*ens realissimum*), the most perfect and therefore the most worthy of worship and obedience. Augustine taught that nature should be prized for the love of God who made it.

The flourishing of each kind of being that constitutes nature is willed eternally by God. Etienne Gilson summarizes the medieval picture of nature: ''The very physical world, created as it is for God's glory, tends with a kind of blind love towards its Author; and each being, each operation of each being, depends momentarily, for existence and efficacy, on an omnipotent conserving will'' (1940, p. 364). Our malleable world's history unfolds underneath the heavens which signify and testify to the God behind and around nature who providentially wills its fecundity or flourishing. While nature was understood to be a diverse realm of goods, it was also seen as less perfect than God, subject not only to temporal passage, but to decay, corruption, and perishing. Historically, nature suffers from human wickedness, beginning with an aboriginal turning away from God which has poisoned human endeavors (Genesis). Because nature was understood to be fundamentally good, evil was thought of as something unnatural or against nature. In a sense, health was thought of as conceptually prior to disease; it would not do to analyze health as simply the absence of disease, whereas one could say that someone with a disease was someone who is not healthy. On this view, according to which illness and wickedness are an abuse of something that can be properly used and enjoyed, evil was considered *privatio boni*, or the absence of good.

In the medieval world-view, correcting ills involves the establishment of one's God-given purpose, discovering right reason and appropriate appetites in a God-centered life, and a right order of love (what Augustine called the *ordo amoris*). For human beings this meant realizing that persons are made in the image of God and are called into God's likeness. This was interpreted as appreciating that human beings had certain powers such as agency, reason, and love, that reflect God, who is unsurpassable in power, agency, reason, and love. One of the reasons why evil was viewed with profound abhorrence at this time was that it was believed to involve the contorting of something divine. Christian philosophers and theologians held further that for humans to be released from evil (or sin) they must accept God as revealed in the life of Jesus Christ. Christians held that God became incarnate (from the Latin for ''infleshed'') as a human being to manifest divine love and mercy, and to point the way to a reconciliation with God that involved fulfillment in this life and the next. Medieval Christians were not just apprised of the allure of deeper fulfillment; there is also evidence of a fear of failing to realize a merciful reconciliation with God. The art, literature, and architecture of the period provide evidence of both a longing for heaven and a fear of hell.

As a world of diverse goods, many of the medievalists posited rightful relations among the different orders or ranks of good. In this, Aquinas followed Aristotle in ranking plants as lower than non-human animals and non-human animals as lower than humans. Human beings were considered of greater perfection among corporeal, created beings, for humans have mass (like earth), life (like plants), movement and senses (like non-human animals), and also reason. As a being of higher rank on what amounts to a Great Chain of Being, Aquinas thought this order made hunting and meat eating permissible: ''As the plants make use of the earth for their nourishment, and animals make use of plants, and man makes use of both plants and animals'' (*Summa Theologica*, Part 1, LXXV).

Medieval astronomy was largely a refinement of the work of Ptolemy (second century CE), according to which the earth is the center of the universe. While it is popular to cast medieval science as pure superstition (hypothesizing about demons and witches), it was more sophisticated than is often credited. For example, there is a widespread impression that medievalists thought the earth is flat. But this is false. As C. S. Lewis correctly observes: ''Physically considered, the earth is a globe, all the authors of the high Middle Ages are agreed on this'' (Lewis 1964, pp. 140–1; see also Russell 1991).

By Aquinas's lights, civil society was a natural human development and essential part of our nature. We are completed partly in relation to one another. As he rooted ethics in nature, Aquinas distinguished between the eternal law which may be abstractly formulated as ''Do good and avoid evil,'' whereas more specific moral truths are grounded in the nature of the person or beings at issue. Thus, it is because of our biological nature that nourishment counts as a good for human beings. To use an extreme example, by contrast, if human beings were profoundly different and had bodies that were non-flammable, then putting one's own hand in a furnace would not count as an ill act and thus not something evil or wrong. For Aquinas, good and evil are not *ad hoc* features of the world but grounded in nature, including the divine nature. On his view, God's will essentially reflects goodness; God cannot will something intrinsically evil for its own sake.

The above summary is meant as no more than a high altitude overview of medieval philosophy and tradition. There is much diversity and conflict. Consider only one cross-current. Some medieval sources may be used to develop a higher view of animals than Aquinas and many medievalists countenanced. The fact that Aquinas and others saw animals as making up natural kinds whose goodness consisted in their flourishing provides an inroad to recognizing them as possessing intrinsic value. Moreover, there are some medieval precedents for treating animals as partners in creation, as is evident in contemporary narratives of St. Francis of Assisi and St. Anthony of Padua, Celtic tradition, pious stories of the Desert Fathers, and primitive tradition about Jesus' disciples – according to some early sources, Matthew, Peter, and James refrained from meat-eating (see Linzey and Regan 1988; see also CHRISTIANITY).

The emergence of modern science

Modern science did not begin in complete antithesis with the medieval world. The stress on experience, observation, and testing that defined early science was at least anticipated by Aquinas, who taught that there was nothing in the intellect unless it was first in the senses (*Nihil in intellectu nisi prius in sensu*). And before Aquinas, Roger Bacon (1214–94) stressed experience and experimentation. Bacon thought of mathematics as "the alphabet of philosophy," a dictum that would later be applied to nature as modern scientists sought to discover the structure of the created world. Each of the prominent early modern scientists were self-described theists who saw themselves as using God's gifts of reason and inquiry in the investigation of nature, and in overturning what they took to be mistaken pictures of the world inherited from the ancients.

The leading figures in early modern science include Copernicus (1473–1543), Kepler (1571–1630), and Galileo (1564–1642). Copernicus's challenge to geocentricity was seen as a direct attack on the medieval bulwark, and Kepler's further defense of a sun-centered planetary system was an additional blow. Modern scientists put enormous weight on mathematics and geometry in observation. Each of the early scientists construed this as using divine gifts. Kepler thought our geometrical powers were implanted in us as part of our being made in God's image. Like Kepler, Galileo also advanced a geometric view of nature.

> Philosophy is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the letters in which it is composed. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures without which it is humanly impossible to understand a single word of it. (1957, pp. 237–8)

As a mathematician, physicist and astronomer, Galileo's life and teaching were perhaps the most dramatic in terms of the collision between modern science and reigning medieval authority. His articulation and justification of heliocentrity in *Dialogue Concerning the Two Chief World Systems* (1632) and elsewhere pitted him

against the teaching office of the Roman Catholic Church. The Church had adopted the reigning medieval picture of the universe inherited from Ptolemy; there was nothing biblical or essential to medieval philosophical teaching in faith and morals requiring belief in geocentricity. But the Church had set its case on that front, and placed its authority behind it. Galileo's endorsement of Copernicanism led to his being condemned in the Inquisition and held in house arrest.

In Galileo's work we encounter a problem that will run through all of modern philosophy, the problem of integrating the mental and physical. Galileo conceived of material objects as being defined by shape, size, and location.

> Now I say that whenever I conceive any material or corporeal substance, I immediately feel the need to think of it as bounded, and as having this or that shape; as being large or small in relation to other things, and in some specific place at any given time; as being in motion or at rest; as touching or not touching some other body; and as being one in number, or few, or many. (1957, p. 274)

These quantifiable, geometric properties of material objects were primary, and differed from secondary qualities such as color, taste, sound, and feel.

> But that it [any material or corporeal substance] must be white or red, bitter or sweet, noisy or silent, and of sweet or foul odor, my mind does not feel compelled to bring in as necessary accompaniments . . . Hence, I think that tastes, odors, colors, and so on are no more than names so far as the object in which we place them is concerned, and that they reside only in the consciousness. Hence if the living creature were removed, all these qualities would be wiped away and annihilated. (Ibid)

A split is thereby introduced between the world that is disclosed to our sensory perception, and the material objects themselves which, in their sheer, colorless, odorless, tasteless geometry, seem alien.

Galileo did not see himself as providing any difficulties for theism, nor of undermining the conviction that human beings are in the image of God. Still, he helped facilitate an important shift from medieval conceptions of God and nature which, by contrast, were more organic and holistic, than Galileo's geometric atomism. According to atomism, all of the material world is composed of simple, non-compound objects. ''Atom'' is from the Greek for ''not'' (*a*) and ''cut'' (*tomos*); an atom is a simple, indivisible entity. Atomism led some of Galileo's followers to believe that mathematical and empirical investigation can offer a reductive analysis of the world, disclosing the very building blocks of nature. Robert Boyle (1627–92) introduced the term ''mechanical philosophy'' to refer to this new, scientifically based atomism. Boyle thought of nature itself as a colossal machine and compared it to a huge clock. Just as clocks have a maker, so does the cosmos.

Materialism and dualism

Two philosophical visions of nature and God were at the fore in the wake of the scientific revolution: materialism and dualism. The English philosopher Thomas

Hobbes (1588–1679) is representative of materialism, and the French philosopher René Descartes (1596–1650) of dualism.

Hobbes was thoroughgoing in his enthusiasm for the new science and the advent of a materialist conception of human beings as part of nature.

> The world . . . is corporeal, that is, the whole mass of all things that are, is corporeal, that is to say, body, and hath the dimensions of magnitude, namely, length, breadth, and depth: also every part of body, is likewise body, and hath the like dimensions; and consequently every part of the universe, is body, and that which is not body, is no part of the universe: and because the universe is all, that which is no part of it, is nothing; and consequently *no where*. (Hobbes 1962, p. 483)

Hobbes's understanding of human life and behavior was atomistic and determinist. By his lights, God is a material reality, ''a most pure, simple, invisible spirit corporeal.''

Hobbes's materialist analysis of human sense, appetite, and passion had important ethical implications. He was at complete odds with Aquinas's notion that persons are somehow ingrained by nature with a social instinct. Rather, Hobbes held that persons are constitutionally driven first and foremost by self-interest. Without external checks on human endeavors, we are in profound conflict. The natural state of human life is not peace, but war.

> Hereby it is manifest, that during the time men live without a common power to keep them all in awe, they are in that condition which is called war; and such a war, as is of every man, against every man. For War, consisteth not in battle only, or the act of fighting; but in a tract of time, wherein the will to contend by battle is sufficiently known: and therefore the notion of *time*, is to be considered in the nature of war; as it is in the nature of weather. For as the nature of foul weather, lieth not in a shower or two of rain; but in an inclination thereto of many days together: so the nature of war, consisteth not in actual fighting; but in the known disposition thereto, during all the time there is no assurance to the contrary. All other time is Peace. (Ibid, p. 100)

This state of war was depicted succinctly in one of the most often quoted line from Hobbes's work, ''the life of man is nasty, solitary, brutish and short'' (ibid). In the midst of such perilous conditions, our only hope is for each of us to agree to curtail our self-serving desires and to hold ourselves accountable to a sovereign civil power. Civil government is thus a rational prudential outcome of perceived self-interest.

Hobbes's philosophy is an extraordinary synthesis of philosophy and the new science. He met with Galileo in 1636 and set out to do for philosophy and politics what Galileo did for the natural sciences. One of the strongest reasons behind Hobbes's project is his appeal to a unified picture of human life, nature, and God. Because he resisted positing non-material realities, he was not faced with explaining how the material and spiritual interact. He is one of the first modern advocates of the unity of science and philosophy.

Descartes and his followers, who are called Cartesians (from the Latinized form of ''Descartes''), were, like Hobbes, impressed by modern science and the geometrization of nature. Descartes developed analytical geometry, and advanced what may be

considered a geometrical method in philosophy. He sought to identify sure and indubitable foundational beliefs upon which to structure and justify all other beliefs about nature and God.

Descartes's work stands out for his bold skeptical query at the center of his philosophy. In his *Discourse on Method* and *Meditations on First Philosophy* he unleashed a thought experiment of extraordinary power. Descartes entertains the possibility that all his ostensible perceptions of the world are the outcome of an arch, all-powerful, evil force. This is the equivalent of considering whether it is possible that instead of believing you are reading this book just now, you are actually being subject to a massive, systematic, interwoven hallucination; you are in some ''virtual reality'' as opposed to the world as depicted by common sense. In the wake of such a comprehensive hypothesis, Descartes came to conclude that however powerful the demonic, deceptive force, he could not be mistaken in his belief that he exists. His very doubting of everything presupposed that he exists. Descartes then locked his certitude in his own existence with an argument for God's existence to bolster his further conclusion that, due to the goodness of God, he could trust his sensory perception, memory, et al. In a sense, Descartes sought to bracket nature, to hold it all open to doubt, and then to welcome it back as now properly perceived with justification as opposed to blind faith.

Descartes's critics are legion. One substantial objection is that his skeptical method and proposed solution foisted on the world an unprecedented preoccupation with the self. Another criticism is that his solution is profoundly unsatisfactory; once one entertains the evil demon hypothesis, one can never recover. In brief, if you leave nature as Descartes did, you will never return. By way of a modest point in Descartes's defense, his appeal to God in his argument for the trustworthiness of perception admits of a plausible analogue. After all, in child-rearing it seems essential that the child's care-givers do not subject the child to systematic delusions. Language-acquisition, for example, appears to require trustworthiness. Imagine a child who is never given reliable, consistent definitions of terms, nor a consistent grammar. So, Descartes's invoking of God, a God whom Descartes believes has implanted an idea of God within each of us, suggests that Descartes's world-view is not quite as ''nasty, solitary, brutish and short'' as one finds described in standard introductory textbooks. Contrary to some popular caricatures of his thought, Descartes did not propound an incurable isolationist philosophy. (For a contemporary defense of a related theistic account of reason and perception, see Plantinga 1993.)

Unlike Hobbes, Descartes was not a materialist. He was impressed by the natural scientific analysis of the natural world; indeed, his book *The World* upheld a great confidence in the uniformity of matter and mechanistic explanations. Descartes was also impressed by the profound unity of the person as an embodied being. Nonetheless, he was convinced that the person is not exclusively material. Strictly speaking, a person (or mind) is a non-physical concrete being that is materially embodied. His chief reason for this was his belief that he can conceive of himself existing without thereby conceiving of his body or any physical body whatsoever. A sympathetic reconstruction of his argument is that it is based on a principle called the indiscernibility of identicals which may be formalized as: if A is B, then whatever is true of A is true of B. For example, if the morning star is the evening star, then whatever is true of

the morning star is true of the evening star. In this case, it seems to work, for both terms refer to the planet Venus and thus there is nothing true about what is referred to as the evening star which is not also true of the morning star. To see the morning star is to see the same thing as the evening star: Venus. In the case of persons, though, Cartesians argue that it is possible for persons to exist without their bodies, and possible, too, for their bodies to exist without them (e.g. after you die your body may still exist as a corpse). If these represent genuine possibilities – and Descartes thought he could clearly and distinctly conceive of himself without material body – then it appears that the person (or mind) is not identical with her or his body.

Descartes's position amounts to a form of dualism. Today, dualism is considered public enemy number one by many environmentalists. Arguably, a dualism of person and body seems to introduce a damaging breach between human beings and the rest of nature. Four observations may be mustered in reply. First, to posit a distinction between the person and body is not to suggest that persons are now somehow disembodied. One can be a dualist and believe that, under natural conditions, the person functions as a unified embodied being. Second, dualism by itself implies no denigration of the body; there is no need for a dualist to regard the body as a prison or shell or container. Dualists are free to depict material embodiment as a great good. Third, it is not obvious that the science of Descartes's day or ours has disproven dualism. Much of the most advanced work on the brain establishes an integral relation between the mental and physical, but these results may be read as securing a correlation of the mental and physical, not identity. Fourth, one can be a dualist and believe that non-human animals also consist of both minds and bodies. Famously, Descartes did not take this view, however, and it is to this matter that we must now turn.

Descartes is well known for his conviction that non-human animals lack consciousness. Descartes delimited various grades of awareness. In his view, non-human animals only met the first grade.

> To the first (grade) belongs the immediate affection of the bodily organ by external objects; and this can be nothing more than the motion of the sensory organs and the change of figure and position due to that motion. The second (grade) comprises the immediate mental results, due to the mind's union with the corporeal organ affected; such are the perceptions of pain, of pleasurable stimulation, of thirst, of hunger, of colours, of sound, savour, cold, heat, and the like . . . Finally the third (grade) contains all those judgments which, on the occasion of motions occurring in the corporeal organ, we have from our earliest years been accustomed to pass about things external to us. (1911, p. 436)

Descartes's argument against non-human consciousness took two forms. One was an appeal to parsimony. If you do not need to posit grades two and three to describe and explain non-human constitution and behavior, then do not do so. This appeared to Descartes to be good science and philosophy. His second argument rested on his supposition that non-human animals lack language.

> For it is quite remarkable that there are no men so dull-witted or stupid – and this includes even madmen – that they are incapable of arranging various words

> together and forming an utterance from them in order to make their thoughts understood; whereas there is no other animal, however perfect and well-endowed it may be, that can do the like. This does not happen because they lack the necessary organs, for we see that magpies and parrots can utter words as we do, and yet they cannot speak as we do: that is, they cannot show that they are thinking what they are saying. On the other hand, men born deaf and dumb, and thus deprived of speech-organs as much as the beasts or even more so, normally invent their own signs to make themselves understood by those who, being regularly in their company, have the time to learn their language. This shows not merely that the beasts have less reason than men, but that they have no reason at all. (1985, p. 140)

In light of these considerations, Descartes countenanced vivisection. Of course both arguments have been roundly criticized, and both also have defenders today.

Let us now consider two of the major movements in modern philosophy, empiricism and rationalism.

Empirical philosophies of nature

Empiricism is from the Greek *empeiria* for ''experience in.'' Hobbes was an early empiricist. John Locke (1632–1704) was Hobbes's successor and, at key places, his critic. In general, those classified as empiricists privilege experience as a source of knowledge and distrust the role of reason as an independent faculty that permits us to expand our knowledge of reality. There is also a tendency among empiricists to dispense with the belief in innate ideas. Locke was famous at this point for his insisting that at birth the human mind is a blank slate, a *tabula rasa*.

Locke located human beings squarely in nature. Like Descartes he was a dualist, but he opened the door to thinking otherwise. In *An Essay Concerning Human Understanding* he suggests that it is possible for God to grant matter the power to think. Locke thought of animals as possessing sensory powers and faculties at a much higher level than Descartes posited, but he still thought animals lacked our abilities of abstraction and moral powers.

Locke continued Galileo's distinction between primary and secondary properties. The nature of matter perplexed him, however, and he characterized matter as a ''something we know not what'' underneath the primary qualities. In Locke's work we can see the ongoing modern problem of integrating the mental and physical. Because we cannot picture matter in itself without all the accompanying characteristics of color (which we bring to our view of the world), matter became a mysterious substratum, that which stands underneath observable qualities.

Locke resisted the appeal to the divine right of kings, and supported democracy, with a limited role given to a monarch. Unlike Hobbes, and in closer alliance with medieval forebears such as Aquinas, Locke held that we are by nature social, and oriented to civil ties.

Locke's conception of property was pre-eminent and has had an important role in the subsequent philosophy of nature and society. As a theist, Locke believed that God owns the whole cosmos. Putting this differently, and toning down the economic imagery, he held that the cosmos belongs to God. In creating human persons God

confers on persons a limited self-ownership. In *The Second Treatise of Government* Locke writes: ''Every man has a property in his own person; this nobody has any right to but himself'' (1980, p. 19). This construes property as something that is pre-conventional and societal. That is, property rights inhere in a person naturally; they are not the creation of some government. Construing oneself as one's own property may seem to treat oneself as a commodity, but it may be argued that Locke was simply securing here a high view of an individual's right to self-determination. Because each person has such self-possession, each one owns or is entitled to their agency of labor. The ownership of things outside oneself then comes about owing to one's exercise of labor. ''The labor of his body and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature has provided and left it in, he has mixed his labor with it, and joined to it something that is his own, and thereby makes it his property'' (ibid). So, while Locke held that the whole world made up a commons, it was common in the sense that no individual could claim by divine right ownership of it all and yet any individual could acquire parts of it under certain conditions. ''As much land as a man tills, plants, improves, cultivates, and can use the product of, so much is his property'' (ibid, p. 21).

Locke's labor-centered concept of property was enormously influential in North American views of wilderness. He deemed uncultivated land as waste and of profoundly less value than land that has ''benefited'' from labor. Locke is often critiqued as an arch-individualist who encouraged ecologically reckless exploitation of nature. Some of these charges are difficult to dismiss. But it should be underscored that he held that private property acquisition was countenanced only when there was enough to go round, and his theistic religious convictions led him to insist on the importance of generosity and care for others. An ample conservationist ethic can be forged in Lockean terms.

George Berkeley (1685–1753) is an empiricist whose work should be of interest to those who hold that nature is itself largely a construct of society and culture. Berkeley was a great idealist who argued against Locke's concept of matter. By his lights, Locke's substratum was too mysterious; it made more sense simply to deny the mind-independent character of this ''something'' no one can directly grasp. Instead, Berkeley held that the whole cosmos is constituted by minds and perception; ''to be is to be perceived'' (*Esse est percipi*) is his famous dictum. In *A Treatise Concerning the Principles of Human Knowledge*, he launched the following objection to those who suppose they can picture things that are mind-independent.

> But say you, surely there is nothing easier than to imagine trees, for instance, in a park, or books existing in a closet, and no body by to perceive them. I answer, you may so, there is no difficulty in it: but what is all this, I beseech you, more than framing in your mind certain ideas which you call *books* and *trees*, and at the same time omitting to frame the idea of any one that may perceive them? But do not you your self perceive or think of them all the while? This therefore is nothing to the purpose: it only shows you have the power of imagining or forming ideas in your mind; but it doth not shew that you can conceive it possible, the objects of your thought may exist without the mind: to make out this, it is necessary that

> you conceive them existing unconceived or unthought of, which is a manifest repugnancy. (1982, p. 32)

A version of this puzzle is sometimes advanced by those who claim that all our concepts of nature are indeed reflections of our own categories. Berkeley's belief in God allowed him to believe in objects not perceived by humans. Because God is all-perceiving, nature and its laws are sustained.

David Hume (1711–76) was a great champion of empiricism, a skeptic about the power of reason to establish truths about the natural world, and yet a strong advocate of a scientific approach to nature, including human nature. In *A Treatise of Human Nature*, Hume writes:

> There is no question of importance, whose decision is not compriz'd in the science of man; and there is none, which can be decided with any certainty, before we become acquainted with that science. In pretending therefore to explain the principles of human nature, we in effect propose a complete system of the sciences, built on a foundation almost entirely new, and the only one upon which they can stand with any security. (1978, p. xvi)

Hume's scientific inquiry led him to believe the self is not a concrete, substantial individual existing over time, but a bundle of mental properties and ideas. He was also led to see human life as firmly placed in the natural world. We are not radically displaced from nature, but part of the bundle of nature that includes us. His work on religion placed theistic belief and practice in natural history. Unlike medieval Christianity, Hume resisted a supernaturalist view of God in which God miraculously affects human history.

While Hume was a skeptic about the capacity of reason to establish an ethic, he instead looked to sympathy as a more suitable foundation. He held that sympathy with others was a natural, fundamental human trait and that when this was refined by knowledge of the relevant circumstances and impartiality, sympathy could ground an ethic of virtues and a body of moral rules. This understanding of values may appear to some critics as too unstable, but Hume sought to secure a rich view of the sustained (and sustainable) power of sympathy and the other emotions behind moral judgments. Hume's ethical theory was refined by Adam Smith (1723–90) and later by advocates of what is known as the Ideal Observer theory.

Because reason was not the benchmark for ethics, Hume thought virtues were rife within the natural world among creatures not capable of abstract reasoning.

> 'Tis plain that almost in every species of creatures, but especially the nobler kind, there are many evident marks of pride and humility. The very port and gait of a swan, or turkey, or peacock show the high idea he has entertain'd of himself, and his contempt of all others . . . All these are evident proofs, that pride and humility are not merely human passions, but extend themselves over the whole animal creation (Ibid, p. 326).

This is radically different from Descartes's assessment of animal life.

Rationalist philosophy of nature

Rationalism diverges from empiricism in its assessment of the power of reason. Benedict Spinoza (1632–1677) was a rationalist philosopher of the first order. His view of nature was at the heart of his philosophy; indeed he held that the only thing that exists as a substantive thing is what he refers to as *Deus sive Natura* (God or nature). He did not thereby deny variation in nature. Rather, he thought there were indefinitely many attributes or aspects of *Deus sive Natura* which may be distinguished and identified individually. So, he allowed that there is a kind of mental–physical dualism in the sense that one can think of the mental and physical as different ways of conceiving something. Still, in the end, everything is a reflection of a vast divine, natural unity: ''Mind and body are one and the same individual which is conceived now under the attribute of thought, and now under the attribute of extension'' (Spinoza 1909, vol. 2, p. 102). Spinoza's integrated, holist concept of nature laid some of the groundwork for late twentieth-century, DEEP ECOLOGY as found in Arne Naess's philosophy of nature. Naess's high valuation of the symbiotic complexity of life can be thought of as extending Spinoza's vision of nature.

Spinoza was a firm determinist. He captured this in terms of the expression *natura naturans*, or nature naturing. ''By *natura naturans* I understand whatever follows from the necessity of God's nature'' (ibid, p. 68). His rationalism is displayed in his proof of God's or nature's existence and in his ethics. While these arguments are too elaborate to reproduce here, it is worth noting how his understanding of reason and liberty was folded into a liberal understanding of society.

> The ultimate aim of Government is not to rule or restrain by fear, not to exact obedience, but on the contrary, to free every man from fear, that he may live in all possible security; in other words to strengthen his natural right to exist and work without injury to himself and others. The object of government is not to change men from rational beings into puppets, but to enable them to develop their minds and bodies in security, and to employ their reason unshackled. . . . The true aim of Government is liberty. (Ibid, vol. 1, p. 258–9)

This may seem a paradoxical claim for a determinist, but for Spinoza liberty involved the right use of reason and freedom from external constraints, which may be secured even though we reflect the necessary features of God or Nature.

Gottfried Wilhelm Leibniz (1646–1716) was a German rationalist as well as a mathematician. He is probably most popularly known today for claiming that our cosmos is the best possible world, a claim that is lampooned in Voltaire's *Candide*. His view may be defended by placing it in the broader context of his theory of values and philosophy of God, but in this context it will be more important to look at another area of his thought.

Leibniz contended that the atomism of the new science resulted in profound philosophical problems. If the world were indefinitely divisible there would be no way in which extant physical objects could be forged. That is, a world of atoms that take up no space whatever are not able to be the building blocks of the material world.

> If I am asked in particular what I say about the sun, the earthly globe, the moon, trees, and other similar bodies, and even about beasts, I cannot be absolutely certain whether they are animated, or even whether they are substances, or, indeed, whether they are simply machines or aggregates of several substances. But at least I can say that if there are no corporeal substances such as I claim, it follows that bodies would only be true phenomena, like the rainbow. For the continuum is not merely divisible to infinity, but every part of matter is actually divided into other parts as different among themselves as the two aforementioned diamonds. And since we can always go on this way, we would never reach anything about which we could say, here is truly a being, unless we found unity independent of the external union arising from contact. And if there were none, it then follows that, with the exception of man, there is nothing substantial in the visible world. (1989, p. 80)

We are secured because, by his lights, we are souls or simple substances he called ''Monads.'' By analogy with ourselves he proposed that the cosmos itself is made up of monads, centers of force that are alive in some fashion. This is a version of ''panpsychism'' (literally, ''everything is alive''). These monads are attributed with appetite, perception, and feeling.

Like Spinoza, Leibniz's rationalism led him to prize a world order informed by wisdom and just balance.

> Everything is regulated in all things once for all with as much order and agreement as possible, since supreme wisdom and goodness cannot act without perfect harmony: the present is big with the future, what is to come could be read in the past, what is distant expressed in what is near. The beauty of the Universe could be learnt in each soul, could one unravel all its folds which develop perceptibly only with time. (1951, p. 28)

Regardless of the credibility of Leibniz's monadology as a metaphysic, there is an appreciable attraction to his comprehensive understanding of a harmonized universe.

Empires, naturism, and fideism

In closing, consider three additional features of modernity.

With the end of the medieval period and the advent of modern science, we also see the development of new technology for war. The so-called Enlightenment had its own dark side. Nation-states became increasingly ambitious at empire-building, as European Great Powers expanded to the Americas, Africa, Near and Far East. The expansion was sometimes justified on the grounds that ''primitive persons'' were not really persons, not fully rational, akin to non-human animals; they failed to exercise proper labor and thus failed to have legitimate property rights, they were religiously and morally depraved. This adventurism was critiqued by some. From the medieval period, Aquinas's ethics was employed and refined by Francisco de Vitoria (1486–1546) to critique the treatment of Native Americans by Spanish Conquistadors. Francisco sought to secure natural rights across ethnic, cultural and religious boundaries. Hugo Grotius (1583–1645) also argued for a theistic treatment of

natural law to contain expansionist wars. Throughout early modern philosophy, there were recurrent efforts to check what was perceived as the wrongful use of industry and technology, from Erasmus and More to Hume and to Kant's republican cosmopolitanism. Despite the case for tolerance advanced by both empiricists and rationalists, Europe built its empires. And some prominent figures in the Enlightenment shared in the racism of the period. Hume, for example, characterized ''negroes'' as inherently inferior to whites. Locke countenanced slavery in his contribution to the Carolina proprietors in the American colonies.

A second important feature of the age may be called ''naturism.'' The eighteenth century fostered various forms of romanticism, among which one finds Jean-Jacques Rousseau (1712–78) and his high view of the goodness of nature. In his book on education, *Emile*, Rousseau proclaims the goodness of nature over the malady of ill-conceived human interference:

> Everything is good as it leaves the hands of the AUTHOR of things; everything degenerates in the hands of man. He forces one soil to nourish the products of another, one tree to bear the fruit of another. He mixes and confuses the climates, the elements, the seasons. He mutilates his dog, his horse, his slave. He turns everything upside down; he disfigures everything; he loves deformity, monsters. He wants nothing as nature made it, not even man; for him, man must be trained like a school horse; man must be fashioned in keeping with his fancy like a tree in his garden. (1979, p. 31)

The root of evil comes about through socially conceived entitlements and conventions, especially the advent of property.

> The first man, who, having enclosed a piece of land, thought of saying ''This is mine'' and found people simple enough to believe him, was the true founder of civil society. How many crimes, wars, murders; how much misery and horror the human race would have been spared if someone had pulled up the stakes and filled in the ditch and cried out to his fellow men: ''Beware of listening to this impostor. You are lost if you forget that the fruits of the earth belong to everyone and that the earth itself belongs to no one!'' (1984, p. 109)

Rousseau praised vegetarianism:

> One of the proofs that the taste for meat is not natural to man is the indifference that children have for that kind of food and the preference they all give to vegetable foods, such as dairy products, pastry, fruits, etc. It is, above all, important not to denature this primitive taste and make children carnivorous. If this is not for their health, it is for their character; for, however one explains the experience, it is certain that great eaters of meat are in general more cruel and ferocious than other men. This is observed in all places and all times. (1979, p. 153)

Finally, I note that this age of modernism had its share of skeptics about reason and experience. Michel de Montaigne (1533–92), Blaise Pascal (1623–62), and Pierre Bayle (1647–1706) all took issue with what they saw as the pretensions of their day, philosophical, religious, and political. All were theists but their faith was tempered by

an appreciation of opposing viewpoints, and they were more guarded still about whether modern science and the modern philosophies of nature that were fueled by them contained all the answers to our deepest needs. Isaac Newton (1642–1727) may have secured a comprehensive, scientific portrait of the physical world for early moderns. And yet skeptical questions were also very much alive as to whether any system of mechanics or philosophy could be devised that would secure a sustained, beneficent enlightenment.

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