Masters and Possessors of Nature

Thomas W. Merrill

The name René Descartes will forever be entwined with our hopes and fears about the technological project. While it was Francis Bacon who originated the idea of conquering nature for the sake of relieving man's estate, it was Descartes who told us we might truly become "like masters and possessors of nature"; Descartes who gave us the mathematical physics that has proven to be the indispensable instrument of modern science; and Descartes who foresaw that the ultimate instrument of the Baconian project would have to be medicine, since health is the primary good of life and the foundation of all other goods. The technological project was from the start biotechnological—in intent if not in realized practice—and it is hard not to think of today's "transhumanists" when we read Descartes' quasi-promise that technology might spare us even the "enfeeblement of old age."

But the mastery and possession of nature is not the only, perhaps not even the deepest, theme of Descartes' thought. We find in Descartes, and especially in his epoch-making *Discourse on Method*, a reflectiveness about what it means to be human and about the political conditions of his own activity that far outstrips the reflections we find in the contemporary heirs of his rhetoric, or indeed even what Descartes claims to learn from his own science. No mere scientist could have written the *Discourse on Method* or could help us understand the full depth of its complex message—and particularly its political and social message.

Fortunately, those interested in understanding more about Descartes and his times are not without aid from scholarship. Two biographies of Descartes, both helpful and interesting, have recently appeared: one, Desmond Clarke's *Descartes: A Biography*, more scholarly and thorough; the other, A. C. Grayling's *Descartes: The Life and Times of a Genius*, more accessible to the general public and more novelistic. We also have Amir Aczel's

fascinating if uneven *Descartes' Secret Notebook*, which provides a very accessible account of a mysterious Cartesian manuscript whose significance has only been recognized fairly recently. All of these books are helpful to have at one's side when reading the *Discourse*.

For readers desiring a more serious engagement with Descartes the thinker, however, two volumes of work by the late Richard Kennington are indispensable. One is a volume of essays on Bacon, Descartes, and others, *Of Modern Origins: Essays in Early Modern Philosophy*, at the core of which are seven closely argued and highly illuminating essays on Descartes. The other is a lively and careful new translation of the *Discourse*, accompanied by an interpretative essay. Kennington, a highly original student of Hans Jonas and Leo Strauss, deserves far more attention than he has received, and while this is not the place to explore his interpretation of early modern philosophy, suffice it to say that Kennington is an extremely helpful guide to these matters. In particular, his translation of the *Discourse*, which will be the one cited here, serves as an admirable introduction to Descartes.

René Descartes was born in France in 1596. The son of a lawyer, he studied at the famous

Discourse on Method by René Descartes (trans. Richard Kennington)
Focus ~ 2007 ~ 88 pp. ~ $12.95 (paper)

On Modern Origins: Essays in Early Modern Philosophy by Richard Kennington
Lexington ~ 2004 ~ 304 pp. ~ $32.95 (paper)

Descartes: The Life and Times of a Genius by A. C. Grayling
Walker & Co. ~ 2006 ~ 368 pp. ~ $26.95 (cloth)

Descartes: A Biography by Desmond Clarke
Cambridge ~ 2006 ~ 520 pp. ~ $40 (cloth)

Descartes' Secret Notebook by Amir Aczel
Broadway ~ 2005 ~ 288 pp. ~ $24.95 (cloth) $14.95 (paper)

Jesuit school La Flèche and was apparently meant to practice law. But he left France in 1618 to study what he called the "great book of the world" and to serve in various armies engaged in the Thirty Years War, then just beginning. It was during those travels, he later claimed, that he conceived of the notion of a universal "method"—that is, a set of rules or procedures for thought—during a famous night of dreams in Germany in November 1619. We know little about Descartes' doings during the 1620s, but he returned to France and lived in Paris for a time. He composed an initial attempt to articulate his method, the *Rules for the Direction of the Native Intelligence*, sometime in the 1620s, but never completed it and left it unpublished at his death. In 1628 he left Paris for good for the Netherlands, where he lived an anonymous and somewhat nomadic life for several years. In the early 1630s, he wrote a book of his physics, *Le Monde* (*The World*), that was Copernican: heliocentric, materialistic, and mechanistic. Intended for publication in 1633, Descartes suppressed the manuscript when Galileo was punished by the Catholic Church for publishing similar opinions. In its stead, Descartes published a set of three scientific essays, together with a preface. The essays were chunks of Descartes' science minus the dangerous Copernicanism; the preface was the Discourse on the Method of Conducting One's Reason Well and Seeking Truth in the Sciences (usually known as the Discourse on Method, or just the Discourse).

The *Discourse* and the essays won Descartes much praise and much criticism, especially of his arguments about God and the soul, and Descartes was moved to respond to the criticism with his *Meditations*, published in 1641, which dealt more extensively with metaphysics and what we would call epistemology. He also published the *Principles of Philosophy* in 1644, which was a restatement of his philosophy and parts of his physics and which he intended for use as a textbook in universities, and the *Passions of the Soul* in 1649, which was in part the product of his correspondence with the young Princess Elizabeth of Bohemia. Descartes died in 1650 in Sweden, where he had been given a pension by his tutee Queen Christina.

The dominant impression of Descartes one gets from the recent biographical works is of a prickly, proud, deceptive man, and one whose desire for secrecy was large, even verging on the pathological. Leaving aside the sad and somewhat pathetic story of the early death of his illegitimate daughter, much of the drama of Descartes' life is found in his disputes with his contemporaries over various scientific matters. Reading his biography is often

like reading the letters column of a scientific journal containing a particularly cantankerous dispute over who discovered what first. Descartes spent much of his life in seclusion, in touch with the outside world only through one trusted correspondent, and was so protective of his privacy that he would sometimes put false addresses on his letters. The themes of masks, of secrecy, of a solitary thinker living concealed from the world, run throughout Descartes' writings. In an early fragment from his papers, he writes, "I am now about to mount the stage, and I come forward masked." Or, as he puts it elsewhere, *Bene vixit, bene qui latuit.* He lived well who hid well.

These recent biographies show that it isn't easy to pin down what lies behind the mask. Clarke, whose biography is the most careful and the fullest among this group, is fairly reserved about what he thinks Descartes' ultimate religious views were, though he makes it clear that for him the scientific Descartes is the most interesting one. Grayling and Aczel, on the other hand, both propose what might fairly be called conspiracy theories about the true Descartes.

Grayling argues at length that during his mysterious "lost" years in the 1620s Descartes was a spy for the Jesuits and thus the Spanish and Austrian Hapsburgs. Of course, that would mean that Descartes was working against the interests of his native France, which would provide ample reason for secrecy and for Descartes' abandonment of France for the Netherlands in 1628. This hypothesis also allows Grayling to discern a melodramatic depth in Descartes' correspondence in the 1640s with Princess Elizabeth, whose father Frederick was the first victim of the Austrian Empire in the early years of the Thirty Years War. Grayling's hypothesis is interesting, and possibly true, since we know little about Descartes' travels and doings in the 1620s. Yet the claim remains unproven, and Grayling weakens his claim by basing it on Descartes' alleged "unwavering and orthodox" Catholicism filtered through his Jesuit education. Nothing is more contested in Descartes scholarship than just this question of his religious belief, but suffice it to say that an orthodox Jesuitism is not the most likely of possibilities.

By contrast, Aczel finds a Rosicrucian Descartes behind the mask, more influenced by Renaissance magic and mysticism than Catholic theology. Where Grayling has Descartes traveling through Europe for the Jesuits, Aczel suggests he was looking up fellow Rosicrucians, including, perhaps, Kepler. While Aczel's evidence is intriguing, he is less persuasive in his account of what all that meant to Descartes.

Where Aczel's book is persuasive and well worth reading, however, is with regard to the secret notebook of the title. The notebook in question was found amongst Descartes' papers after his death and has long since been lost. As it happens, however, the philosopher Leibniz saw and copied at least part of it in 1676. That manuscript included pages in a code, thought now to be Rosicrucian in origin, that was only broken in the 1980s by a French scholar. It turns out that Descartes seems to have discovered an important mathematical formula a century before the great mathematician Leonhard Euler did. (Euler's theorem or formula—now sometimes called the Descartes-Euler formula—holds that for every regular solid, the sum of the number of faces and the number of vertices minus the number of sides equals two. As the first topological invariant to be discovered, it is important for the mathematical field of topology.) The story of Descartes' discovery of the concept is fascinating, and is told by Aczel with enthusiasm and clarity.

But beyond the mysteries and conspiracy theories of Descartes' life that attract biographers remains the legacy of Descartes' philosophy—where the only reliable guide to his thinking is his own writing. One thing we therefore do know for sure is that a key to the *Discourse on Method* is the book it replaced, *Le Monde*. Part Six of the *Discourse* tells us that the fate of Galileo and the consequent suppression of *Le Monde* form the crucial historical background of the *Discourse*. That means that the *Discourse* is a fundamentally different kind of book than *Le Monde*. Like Socrates in the *Apology*, Descartes is called before the bar of religion and compelled to explain himself. The *Discourse on Method* is the closest Descartes comes to political philosophy.

What then is the argument of the *Discourse on Method*? Descartes tells us his intention is not to teach the method, since those who claim the authority to teach can be blamed if their advice turns out to be bad. Rather, Descartes gives a picture of his life—a history or a fable—to show us how he conducted his reason. This ambiguity about the exact character of the book is an essential to its rhetoric: if the book is but a history, it might be taken to relate some merely idiosyncratic aspects of Descartes' life. But if the book is a fable, or a parable, Descartes' example would be one to be imitated. This curious coyness is at least in part self-protective: Descartes blunts any claim that he teaches something contrary to the Church. And yet we can well ask: Why does science or method need a "discourse" at all? Why not just teach the method? Is there some reason (other than fear of

persecution) why the impersonality of modern science is taught by its founder by means of a highly personal autobiography?

The six parts of the *Discourse* fall into two major phases bracketed by introductory and concluding material. Part One describes Descartes' education at La Flèche and his eventual rejection of the philosophical tradition. Parts Two and Three describe the first major phase of Descartes' self-education, his reflections on the correct method for attaining knowledge (in Part Two) and on the provisional morality he needs to regulate his life while seeking the truth (in Part Three). Nine years separate those reflections on method and morality from the second phase in which Descartes completes the essential pillars of his science: the securing of the metaphysical foundations for the sciences by means of reflections on the soul, God, and truth (in Part Four) and Descartes' attempts to elaborate his physics (in Part Five). Part Six relates Descartes' decision to publish the *Discourse* and essays, despite the fate of Galileo, a decision that turns on the viability of the project of mastering and possessing nature.

The *Discourse* begins with a famous joke: "Good sense is the best distributed thing in the world, for everyone thinks he is so well provided with it that even those who are most difficult to content in all other things do not customarily desire more than they have." On first glance, Descartes seems to assert an equality of intellect; a second glance, as Kennington observes, reveals that what is equal isn't intellect but self-satisfaction. We're all so smug about how smart we are, Descartes implies, that we don't think we need any more smarts. Unlike Socrates, we don't know that we don't know anything. Descartes thereby points to a rhetorical problem for his book and to a major theme of his reflections on method. How do you write for people who think they already know all they need to know? And how can you ever hope to know anything true if we are all trapped in our smug points of view?

Descartes' rhetorical problem provides one clue to our question about the autobiographical form: by veiling the measure of his scientific and philosophic ambition in a haze of self-deprecating idiosyncrasy, Descartes can hope to circumvent our natural attachment to our preconceived opinions. Moreover, Descartes' treatment of his education in, and eventual rejection of, the tradition of western philosophy, confirms and deepens the hint about the problem posed by our native self-satisfaction. He had, he tells us, an "extreme desire" to learn letters and literature—extreme because he thought that the old books contained "a clear and assured knowledge of

all that is useful for life." But this desire was sorely frustrated. Fables make us believe things are possible which are not; histories puff up their subjects by omitting the "most base and least illustrious circumstances"; eloquence is beautiful but sterile; and the moral writings of the ancients are like palaces built on sand and mud. And philosophy? Philosophy is a disgrace, a scene of endless dissension. Nothing in it is not in dispute, and there is no claim so crazy that some philosopher has not made it. Only mathematics won praise from the youthful Descartes for its clarity and certainty.

And so Descartes left La Flèche, and France, to study the "great book of the world." What men do, he tells us, is a far more reliable guide to the world than what they say; we are more likely to find some truth in the reasonings of practical men about their affairs than in the airy speculations or imagined republics of philosophers. Practical men are likely to be punished by the outcome if they judge wrongly, while philosophers can spin theories all day long and never run into a single fact. As we might say, businessmen are likely to be solid but not very noble, while academics are likely to be moralistic and outlandish, not to say ideological. The self-interest alluded to in the first line of the book now proves to be a more solid ground for knowledge than mere speculation. The businessman is no less trapped in his own perspective than the philosopher, but at least his errors are more quickly caught. We see here a foreshadowing of Descartes' turn away from the speculative philosophy of the schools to a practical philosophy whose fruit will be the mastery and possession of nature. The solid, dependable ground of Descartes' philosophy will be self-interest, not the highfalutin but foundationless musings of the ancients.

Part Two finds Descartes in the famous "stove" (really a heated room) in southern Germany, where he had gone to see the coronation of the Holy Roman Emperor. Descartes begins with this thought: things that have had many masters or origins are less perfect than those that have had only one. Perfection stems from one master, not many. Descartes provides this list of examples: buildings designed by a single architect are more beautiful than those worked on by many; cities that have grown up over time are more chaotic than one designed by a single engineer, since fortune rather than the "will of men using reason" seems to have been the source of the former; peoples whose laws have been made piecemeal as necessity requires are not as well governed as those who had a single prudent lawgiver at the beginning; the true religion, whose laws were "made by God alone" must be better than all the others; sciences

made up of probable reasonings with contributions by many people over time are less true than the "simple reasonings [of] a man of good sense"; and, finally, because we were all children before becoming men—and therefore must be governed for a long time by "our appetites and our preceptors"—our judgments cannot be as solid as if "we had had the entire use of our reason from our birth."

Two things are striking about this list. One is that the contrast throughout is between fortune, or what is given to us without any intention or planning on our part, and will (to be sure, the "will of men using reason"). The natural is chaotic; perfection seems unavoidably artificial. We see here already the roots of the theme of mastery and possession of nature. We also see here the origins of modern rationalism as twentieth-century political philosopher Michael Oakeshott understood it: Cartesian perfection applied to political and social life is the planner's dream. To be fair, Descartes also says that we do not have the liberty to remake political life in that way—no more than we would cut a straight but arduous course over a mountain when there's already a winding road worn smooth by time. Still, this concession is provisional and tentative rather than fixed.

The other striking thing about this list is the contrast between human beings such as we are, who have been children before becoming men, and the hypothetical man who has the entire use of reason from his birth. Without the use of reason, we are doomed to be divided between our appetites and our preceptors (that is, our teachers), each of which leads in a different direction and neither of which is always correct. Again, the underlying issue is our natural egoism, and its cause seems to be the very fact of human generation itself. Because we are born, our reason is always trying to catch up to our passions. Natural egoism, once thought through, points to rational autonomy and self-mastery as its natural culmination. The image of the man who has been in full possession of his reason stands as an image or goal of what full autonomy would mean: autonomy from the biases inherent in being a particular being, generated in time.

But nature does not help us attain the goal it seems to set for us, and so the demand for autonomy points to the need for artifice to overcome the natural obstacles to autonomy. That artifice is method, and Descartes spends the remainder of Part Two discussing it. He characterizes it as an attempt to join logic, geometrical analysis, and algebra, and therefore closely linked with what we know as mathematical physics. As Descartes tells us, his account here is not really anything like a full account; the treatment of method

in his earlier (abandoned) text, the *Rules for the Direction of the Native Intelligence*, is far more extensive. As depicted in the *Discourse*, the rules of the method are four: never accept as true anything that we do not know clearly and distinctly; divide whatever you examine into as many parts as possible and are required to solve the problem; ascend from those simples back up to the composites, and always order things from simple to complex, *even* if there is no natural order in them; and always make complete enumerations in order to avoid forgetting any.

The method really has two functions. It tells us what we need to do in order to know anything certainly: we need to analyze it into simple parts and then reconstruct it, from the ground up, as it were. True knowing, on this account, is a kind of making. The method also provides us with a means of disciplining ourselves and our natural selfishness, which has, as we have seen, been a theme of the book from the beginning. Taken together, Descartes' arguments tell us: our natural egoism, once thought through, points to autonomy and mastery as its natural goal; but achieving autonomy requires disciplining our natural egoism by means of method.

Yet the method does not complete the Cartesian project. On the one hand, Descartes says, the method requires philosophical foundations. At the time of his meditations in the stove, Descartes claims, he was not mature enough to provide those foundations; they must wait nine years, and are laid out in Part Four of the *Discourse*. On the other, Descartes seeks to replace the old, ramshackle edifice of science and philosophy with a new, more rational building on clear and distinct foundations. Yet he can hardly tear down the old building before the new one is built. Stated less metaphorically, thinking requires the doubt of all opinions but practice or life requires resolute action that depends on opinions that are imperfectly clear and distinct. To remedy this problem, Descartes elaborates his "provisional morality" in Part Three of the *Discourse*.

That morality has four rules: to conform to the laws and customs of the society in which he finds himself; to be "as firm and resolute in my actions as I could be," following even the most doubtful opinions once settled; always to try to conquer himself rather than fortune; and to spend his life "cultivating his reason" and advancing in knowledge with his method. None of these means exactly what it seems. Descartes' conformism (the first rule) is more a matter of his body than any genuine belief. His quasi-Stoic resolve to conquer himself rather than fortune (the third rule) is more a provisional

tactic than the final goal. One does not attack a fortress directly if one expects to take it piece by piece using a method.

Descartes' other two maxims, however, require a bit more comment. His second rule tells us to be firm and resolute and to follow even dubious opinions consistently. We are, he tells us, like travelers lost in a forest. We must not meander aimlessly, or just stop and hope that help will find us. We should pick a direction and walk resolutely; we should give ourselves a goal and not deviate from progress toward it. The forest, it seems, is our natural situation; presumably, in Descartes' simile, the travelers who aimlessly "wander now to one side, now to the other" are the ancient philosophers, and those who stop and hope for rescue are people of faith. Descartes here emphasizes the role the will must play in getting his project started. To escape the dark forest that is nature, we must give ourselves a goal, since nature does not provide one for us—and we can proceed toward that goal free of "repentance and remorse" even if it turns out to have been a bad decision, because we understand that *something* had to be tried.

As for Descartes' fourth rule—that he will follow his own method—it is hardly as provisional as he claims. His method, he says, allowed him to make discoveries, discoveries that gave him "extreme contentments." The pleasure of discovery, of truly understanding something, is no doubt a real pleasure, and one felt by many a scientist. But Descartes also speaks of something deeper, a philosophic desire or resolve to let no opinion go unquestioned. "Since God has given each man some light to distinguish the true from the false," Descartes writes, "I would not have believed that I should be content with the opinions of others for a single moment if I had not proposed to use my own judgment to examine them when the time came, and I would not have been able to exempt myself from scruples in following them if I had not hoped to lose thereby no opportunity of finding better ones." In other words, he would not accept others' opinions, not even for a second, unless he had resolved to judge them himself at an appropriate time. As a practical matter, he accepts the opinions of others on faith. But the faith would be blameworthy, would expose Descartes to scruples or guilt, only if he had given up later opportunities of deciding for himself. For Descartes, guilt attaches to accepting things on faith, but the intransigent resolve to philosophize (someday) washes him clean of any stain. The rules of his provisional morality, perhaps even the method and thus science itself, are provisional to his own philosophizing.

Nine years after his meditations in the German stove, Descartes tells us, he felt mature enough to examine the foundations of his science and settle them once and for all. In Parts Four and Five of the *Discourse*, Descartes presents those foundations—including the famous *cogito*—and sketches the new science he has built on them. Part Four treats metaphysical topics—the soul, God, and truth—and casts a traditional veneer over them; Part Five summarizes the suppressed *Le Monde* in its materialistic, mechanistic glory. Descartes therefore gives us an invaluable lesson in what it means for him to make something intelligible. For Descartes can give clear accounts of these things only by separating body from soul and treating each as though it were an independent being. When Aristotle comes to talk about soul, he says that it has two functions, providing a source of motion and knowing or thinking things. The soul is the hard-to-understand unity of these functions; it might be fair to say that "soul" is just a word for whatever it is that holds these two things together. It is reasonable to believe that Descartes did not think that body and soul could be cleanly separated, as his argument in Part Four seems to claim. Descartes presents a world that is intelligible, but also, in an important respect, impossible. In presenting a clear and distinct account of things, he gives us a world without soul.

The key to Descartes' search for foundations in Part Four is his famous argument about the self or *cogito*. To know what is truly certain, we must begin by doubting everything that can be doubted. We can doubt that the world is as it appears to us, that the world even exists, and that we have bodies. One thing resists this doubt: the self or the "I," for every time we doubt we necessarily presuppose that the "I" exists: "I think, therefore I am" (*cogito ergo sum*). Descartes infers from this that the soul is altogether different from the body and may exist separately from it. He thereby appears to provide support for the Christian view that soul or mind is something separable from the body and will possibly persist in another life. For a book whose background is the fate of Galileo, that appearance has obvious benefits. Elsewhere in the *Discourse*, Descartes himself says that "next to the denial of God, nothing leads weak minds away from virtue more than the denial of the immortality of the soul." But his argument for the separateness of the mind from the body is faulty, and faulty in a way that he himself identifies as faulty elsewhere. His argument at most shows that all we know for sure about the mind is that it is a thinking thing. But the inference from "knows only" to "is only" is not legitimate. Certainly Descartes

claims no direct evidence of an actually separate soul.

As for God, Descartes argues thus: When I doubt, I am aware of myself as imperfect. But knowledge of imperfection implies some awareness of perfection. And where did that notion of perfection come from? I know I am not perfect, Descartes says; if I were perfect, I would not have inflicted doubt on myself. The idea of perfection, then, must have come from a source outside of myself, and that source is God. Moreover, it is more perfect to exist than not to exist, and so it is incompatible with God's perfection that he not exist. This is Descartes' version of the ontological argument.

It is important not to make too much or too little of this argument. Like his case for a separate soul, this claim appears to be more in harmony with traditional Christian theology than it is. For one thing, Descartes gives us no reason to think that this God speaks to or cares for individual human beings in any way. There is even some reason to think that this God cannot really be self-conscious in the way the biblical God is. On the other hand, it would be imprudent to dismiss Descartes' argument as just so much window dressing. Whatever else he is, Descartes' God is perfect, and so continues the reflections on perfection so prominent in Part Two. The idea of God takes the place of the human being in full possession of reason from birth; God serves as an image of what complete autonomy would be, if it were possible.

Part Five of the *Discourse* is a summary of the suppressed *Le Monde*. Descartes aims to give us enough of a taste of his science to whet our appetite for more. The striking thing about Descartes' science is how much he can explain in spite of—or perhaps *because* of—his decision to set aside thorny metaphysical questions about why things hold together or about the sufficient causes of things. His summary has two topics—the coming into being of the visible cosmos and the mechanism of the heart. Both accounts tell us how things work, or how they might work. Both accounts also abstract from the question of what the ultimate source of motion, either for the world or for the heart, really is.

In the case of the visible universe, Descartes sets aside the universe we know and imagines another one. In that world, God creates matter and the laws of nature and motion, like inertia. But once in place, Descartes claims, matter moving in accord with the laws of nature will eventually produce a world very similar to the one we know, with a sun, stars, planets, and so on. No further fussing from the divinity is required, and there is no need to appeal to Aristotelian forms, species, or the like. Descartes claims to discuss only a hypothetical cosmos, and

not ours, in part because otherwise he would contradict the biblical account. But the deeper lacuna in his argument—only papered over by his prudential appeal to the Christian God—is that he no longer cares about *why* things got started at all.

In the case of the heart, Descartes hypothesizes that God created a being whose body was in all respects just like ours, except that it had no soul. In Part Four, he claimed to give us a soul or mind simply separable from body, now he examines a body that is simply a body and wholly separated from soul. For Descartes, the heart is no different from a great clock, whose movement follows necessarily from the disposition of its parts, and man, in the eyes of the physicist, no different from a machine. And with the help of dissection, and the work of the English physician William Harvey, Descartes is able to explain a great deal. Just like his account of the cosmos, Descartes claims to be giving a merely hypothetical account—which claim must be in part prudential. And just like the cosmos, Descartes needs God to give the heart the original fire that sets it in motion.

Taken together, Descartes' metaphysics and physics leave us with a dualism of substances that is hard to understand. If the soul and the body are wholly separate kinds of things, how is it that they interact? Yet in an important sense this objection misses the point. There is good reason to think that Descartes was aware of the weakness of his argument for a separate soul or mind. The usefulness of the separation is epistemological rather than metaphysical. Abstracting body from soul or treating men as if they simply were machines allows us to make much more progress in explaining how things work. The problem of dualism might be troubling if Descartes were trying to give us a genuine first philosophy. But if the ultimate goal of Cartesian science is autonomy, the theoretical puzzles about dualism are simply irrelevant. Descartes can drop the perennial puzzles about the sufficient causes of things (by shunting them off to a convenient account of God) and get on with the scientific work of explaining their necessary causes. For these reasons, Descartes' science only makes sense in the light of the overriding practical goal of his philosophy. It is thus not surprising that he must turn to the mastery and possession of nature in Part Six.

The turning point of Descartes' narrative of his life is his decision, related in Part Six, to publish his science, or some part of it, despite the considerations that led him to suppress *Le Monde*. But publication for Descartes is not a mere decision whether to publish

in this journal or that journal, as it might be for a professional scientist today. Rather, Descartes' decision to publish—together with his novel account of what philosophy is all about—represents a fundamentally new understanding of how science and society relate to one another. By going public with a science designed to make us "like masters and possessors of nature," Descartes inaugurates the politics of the Enlightenment.

At the beginning of Part Six of the *Discourse on Method*, Descartes tells us that the fate of Galileo convinced him not to publish *Le Monde*. He saw nothing wrong with Galileo's views, he says, but he wished to obey the Church, whose authority over his actions is "scarcely less" than the authority of his reason over his thoughts. Stated more bluntly, the Church has no authority over his thoughts. Only when he discovered that his physics, so different from the received Aristotelian science, allowed him to discover "knowledge that is very useful for life" does Descartes come forward to publish his science and risk the fate of Galileo. To keep these discoveries secret would be to sin against "the law that obliges us to procure, so much as we can, the general good of all men." Apparently neither the method by itself nor the alleged proof of the separability of the soul was beneficial enough to warrant publication.

The old, speculative philosophy of the scholastics and the ancients, barren of practical results and productive only of dissension, must be superseded by a practical one that will know "the force and actions of fire, water, air, stars, the heavens, and all the other bodies that surround us as distinctly as we know the different trades of our artisans." The ancient philosophy claimed to be purely contemplative in intention and to examine how things are in themselves rather than to increase our power; Descartes reverses this. The new model of the genuine knower is no longer the theoretical spectator of the heavens but the artisan whose knowledge is know-how and whose final object is power.

With that Descartes announces the technological project, justified by the material benefits it brings to humanity at large. He envisions "the invention of an infinity of artifices that would enable us to enjoy, without any pain, the fruits of the earth and all the goods to be found there." He envisions a science that will be directly and unambiguously good for each of us as individuals, since "the conservation of health… is without doubt the primary good and the foundation of all other goods of this life." The core of technological humanitarianism must therefore be medicine. Descartes' last word in the *Discourse* on the dualism of substances, so famous

and so problematic earlier in the book, is that "the mind is so dependent on the temperament and on the arrangements of the organs of the body that, if it is possible to find some means that generally renders men more wise and more capable than they have been up to now, I believe that we must seek for it in medicine."

This project cannot happen on its own, however. Descartes needs experiments, and so he needs fellow scientists to pursue the research agenda he has laid out. The *Discourse*, which presents itself as mere individual autobiography, now reveals itself as a how-to guide for aspiring scientists. Science as a collective enterprise brings in its wake the need for a common clearinghouse for results—Descartes asks his readers to send him the results of their experiments—and for public communication. Descartes needs the goodwill of the princes and peoples of Europe. The promise of mastery and possession of nature must be seen, first and foremost, in the context of the political necessity to persuade Europe to permit and encourage science. Despite his (provisional, we recall) moral rule always to conform to the laws of his society, Descartes' going public with the *Discourse* is necessarily also a call to revolutionize the place of science in society.

Above all, the (just barely unstated) conclusion of the *Discourse on Method* is the need to liberate science from the Church. Indeed, it is not too much to say that much of the *Discourse* is a contest with the Church, between the view that human life ultimately rests on things we cannot give ourselves and the view that we can and should become masters and possessors of nature. Descartes conjures up a kind of technological Eden, a world in which the punishments for the Fall are done away with through human means. In fact, in its universal charity and its promise to do away with human suffering through human achievement, the technological project both mimics and rejects the path of the Church.

At its core, the technological project rests on a kind of bargain between Descartes the philosopher-scientist and the princes and peoples of Europe. The relationship is meant to be a mutually beneficial one. Descartes and his fellows get the freedom to research and communicate with each other, as well as material support. They also get the glory of being heroes of Enlightenment. The princes and peoples, in turn, are promised the technological and medical benefits to come from the new method, especially the possibility of longer lives. In this way Descartes builds on the selfishness hinted at in the first line of the book: human beings need no conversion to a dedication to something larger than themselves, they

need only to be enlightened about what their true self-interest really entails, in order to support the Cartesian project. Put differently, Descartes proposes an essentially mercenary relationship between science and society.

Previous philosophers had lived in precarious, always uncertain, relationships with their political societies. When Socrates proposed in the *Apology* that the city of Athens pay for all his meals, he was making a joke meant to underline the impossibility of fully harmonious relations between philosophy and politics. And philosophers in the revealed religions always lived with a certain tension between the truths of faith and the use of reason in its own right. Descartes now proposes a place for philosophers that is neither essentially private, as was Socrates, nor institutionalized in a religion, as were Christian philosophers. A byproduct of the technological project, then, is the security it brings for philosophers. Perhaps that was even part of the main goal from the beginning, and Descartes dons the guise of a scientist in order to better protect his philosophizing. Perhaps. But consider the costs: the abandonment of the questions of first philosophy; the reduction of the social bond to each individual's self-interest in extending life through medicine; the ever-present danger of mistaking ourselves for mere matter in motion and nothing more; the profound sense of homelessness that results when we realize that nature, on the Cartesian view, is fundamentally hostile to us. In Part Three, Descartes tells us in his characteristically roundabout way that he had an intransigent resolve to philosophize; for someone like Descartes, all these costs might be worth it if seen as provisional to philosophizing. For the rest of us, they might well weigh heavier.

To borrow a phrase, the battles over Cartesianism are not yet ended. We see them today in those who seek for a richer account of the soul than Descartes can give us. The heirs of Descartes dismiss those longings as the sheerest Santa Claus talk. Without wading deep into those disputes, it is worth remarking that they are neither recent developments nor the product of some ideological agenda. To a very large extent, the reaction against Descartes in the name of the beautiful, the noble, and the sacred constitutes perhaps the greatest source of motion in modern philosophy. Titanic efforts of Rousseau and Kant, of Hegel and Marx, and even, in their way, of Nietzsche and Heidegger, have been devoted to questioning the goal of mastery of nature and the means of mathematical physics. Our current controversies over neuroscience and biotechnology are a dim reflection of those great struggles.

Of course, we cannot just throw Descartes away, as if we could have a do-over. We cannot shove the genie of modernity back into its bottle. For one thing, the Cartesian project works, and does tell us true and useful things. They might not be the whole truth, or the most important truth; but then again understanding things might always have to proceed through parts abstracted from the whole. For another, the Cartesian project does clearly build on genuine human desires. We need no fancy metaphysics to know the pain of disease, poverty, and death, nor to recognize the evils of religious fanaticism. Indeed, in light of all the human longings for the noble and high, for religious experience or genuine human community, the Cartesian project, allied with liberal democracy, has proven quite resilient. In this as in other things, Cartesianism is a sturdy opponent of relativism.

Is there any purchase within Descartes himself to begin thinking through these questions? Within the social contract between science and society proposed at the end of the *Discourse*, there is an abiding dualism or tension: on the one side, there is the mathematical physics that gives us the means to master nature; on the other, the peoples of Europe and the world who stand to benefit from the science and to benefit the scientist. Descartes needs both elements for his project to work; the burden of the *Discourse* as a whole is to join the two. Yet the two are in lasting tension with one another: the human desire to escape want and need is independent of the science; the science cannot account for the human perspective. Science *qua* science is indifferent to human suffering, which is as natural as health is. Even though science can proceed to infinity without ever raising these questions, the project of mastering nature embodies these tensions within itself, and compels us to wonder about the distinctiveness of the human. Perhaps nature itself must be seen in two ways, once as extension known by mathematical physics, and again as the human experience of nature's hostility. How then to think about the intelligibility of the world together with life and motion? Descartes raises, but certainly does not answer, this question about the peculiar status of the human.

Thomas W. Merrill *is a research analyst at the President's Council on Bioethics. All views expressed here are his own.*