Discourse on the Method

RENÉ DESCARTES
1596–1650

Discourse on the Method

Discours de la méthode

Translated from the French with AI (Claude) and edited

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INTRODUCTION

In 1637 René Descartes published, in French rather than Latin and without his name on the title page, a short account of how he had learned to think. It was written as a preface to three scientific essays, on optics, meteorology and geometry, and it tells the story of his own education, his doubts about everything he had been taught, and the method he worked out to replace it.

This is where "I think, therefore I am" first appears. Descartes presents it not as a clever argument but as the one truth that survived his decision to reject anything he could possibly doubt. From it he goes on to God, to the physical world, to the circulation of the blood, and to the difference between human beings and machines.

The book is divided into six parts, and Descartes himself suggests reading them one at a time.

Part One

Various considerations touching the sciences
Descartes recalls his schooling and why nothing he learned satisfied him.

THE AUTHOR'S NOTE ON THE SIX PARTS

	FRENCH	ENGLISH
AT 1	Si ce discours semble trop long pour estre tout leu en vne fois, on le pourra distinguer en six parties. Et, en la premiere, on trouuera diuerses considerations touchant les sciences. En la seconde, les principales regles de la Methode que l'Autheur a cherchée. En la 3, quelques vnes de celles de la Morale qu'il a tirée de cete Methode. En la 4, les raisons par lesquelles il prouue l'existence de Dieu & de l'ame humaine, qui sont les fondemens de sa Metaphysique. En la 5, l'ordre des questions de Physique qu'il a cherchées & particulierement l'explication du mouuement du cœur & de quelques autres difficultez qui appartienent a la Medecine, puis aussy la difference qui est entre nostre ame & celle des bestes.	*If this discourse seems too long to be read all at once, it may be divided into six parts. In the first you will find various considerations concerning the sciences. In the second, the principal rules of the method the author has sought. In the third, some of the rules of the morality he has drawn from this method. In the fourth, the reasons by which he proves the existence of God and of the human soul, which are the foundations of his metaphysics. In the fifth, the order of the questions in physics that he has investigated, and in particular the explanation of the movement of the heart and of some other difficulties that belong to medicine; and then also the difference between our soul and that of animals.*
	Et en la derniere, quelles choses il croit estre requises pour aller plus auant en la recherche de la Nature qu'il n'a esté, & quelles raisons l'ont fait escrire.	*And in the last, what things he believes are required in order to advance further in the investigation of nature than he has done, and what reasons have led him to write.*
	Le bon sens est la chose du monde la mieux partagée : car chascun pense en estre si bien pouruû, que [2] ceux mesme qui sont les plus difficiles a contenter en toute autre chose, n'ont point coustume d'en desirer plus qu'ils en ont.	Good sense is the most fairly distributed thing in the world: for everyone thinks himself so well provided with it that [2] even those who are the hardest to satisfy in everything else do not usually want more of it than they have.[1]
AT 2	En quoy il n'est pas vraysemblable que tous se trompent ; mais plutost cela tesmoigne que la puissance de bien iuger, & distinguer le vray d'auec le faux, qui est proprement ce qu'on nomme le bon sens ou la raison, est naturellement esgale en tous les hommes ; et ainsi que la diuersité de nos opinions ne vient pas de ce que les vns sont plus raisonnables que les autres, mais seulement de ce que nous conduisons nos pensées par diuerses voyes, & ne considerons pas les mesmes choses. Car ce n'est pas assez d'auoir l'esprit bon, mais le principal est de l'appliquer bien.	It is not likely that everyone is mistaken about this. Rather, it shows that the power of judging well and of distinguishing the true from the false—which is properly what is called good sense or reason—is naturally equal in all people; and so the diversity of our opinions does not come from some being more reasonable than others, but only from our directing our thoughts along different paths and not considering the same things. For it is not enough to have a good mind; the main thing is to apply it well.

1 "Good sense" (*bon sens*): as the next sentence explains, Descartes means the power of judging well and telling true from false, which he equates with reason.

	FRENCH	ENGLISH
	Les plus grandes ames sont capables des plus grans vices, aussy bien que des plus grandes vertus ; et ceux qui ne marchent que fort lentement, peuuent auancer beaucoup dauantage, s'ils suiuent tousiours le droit chemin, que ne font ceux qui courent, & qui s'en esloignent.	The greatest souls are capable of the greatest vices as well as of the greatest virtues; and those who walk only very slowly can make much more progress, if they always keep to the straight road, than those who run and stray from it.
	Pour moy, ie n'ay iamais presumé que mon esprit fust en rien plus parfait que ceux du commun ; mesme i'ay souuent souhaité d'auoir la pensée aussy prompte, ou l'imagination aussy nette & distincte, ou la memoire aussy ample, ou aussy presente, que quelques autres.	For my part, I have never presumed that my mind was in any way more perfect than those of ordinary people. Indeed, I have often wished that I had thought as quick, or imagination as clear and distinct, or memory as ample or as ready, as some others have.
	Et ie ne sçache point de qualitez que celles cy, qui seruent a la perfection de l'esprit : car pour la raison, ou le sens, d'autant qu'elle est la seule chose qui nous rend hommes, & nous distingue des bestes, ie veux croyre qu'elle est toute entiere en vn chascun, & suiure en cecy l'opinion commune des Philosophes, qui disent qu'il n'y a du plus & du moins qu'entre les [3] *accidens*, & non point entre les *formes*, ou natures, des *indiuidus* d'vne mesme *especе*.	And I know of no qualities other than these that serve to perfect the mind. For as to reason, or sense, inasmuch as it is the only thing that makes us human and distinguishes us from the animals, I am willing to believe that it is complete in each one of us. In this I follow the common opinion of the philosophers, who say that there are degrees of more and less only among [3] *accidents*, and not among the *forms*, or natures, of *individuals* of the same *species*.[2]
AT 3	Mais ie ne craindray pas de dire que ie pense auoir eu beaucoup d'heur, de m'estre rencontré dés ma ieunesse en certains chemins, qui m'ont conduit a des considerations & des maximes, dont i'ay formé vne Methode, par laquelle il me semble que i'ay moyen d'augmenter par degrez ma connoissance, & de l'esleuer peu a peu au plus haut point, auquel la mediocrité de mon esprit & la courte durée de ma vie luy pourront permettre d'atteindre.	But I will not be afraid to say that I think I have been very fortunate to have found myself, from my youth, on certain paths that led me to considerations and maxims from which I have formed a method. By means of it, it seems to me, I have a way to increase my knowledge by degrees and to raise it, little by little, to the highest point that the mediocrity of my mind and the short span of my life will allow it to reach.
	Car i'en ay desia recueilly de tels fruits, qu'encore qu'aux iugemens que ie fais de moymesme, ie tasche tousiours de pencher vers le costé de la defiance, plutost que vers celuy de la presomption ; & que, regardant d'vn œil de Philosophe les diuerses actions & entreprises de tous les hommes, il n'y en ait quasi aucune qui ne me semble vaine & inutile ; ie ne laisse pas de receuoir vne extreme satisfaction du progrés que ie pense auoir desia fait en la recherche de la verité, & de conceuoir de telles esperances pour l'auenir, que si, entre les occupations des hommes purement hommes, il y en a quelqu'vne qui soit solidement bonne & importante, i'ose croyre que c'est celle que i'ay choisie.	For I have already reaped such fruits from it that, although in the judgments I make about myself I always try to lean toward distrust rather than toward presumption, and although, when I look with a philosopher's eye at the various actions and undertakings of all people, there is hardly one that does not seem to me vain and useless, I nevertheless take the greatest satisfaction in the progress I think I have already made in the search for truth. And I form such hopes for the future that if, among the occupations of human beings as purely human, there is any one that is solidly good and important, I dare to believe that it is the one I have chosen.

2 The vocabulary of scholastic philosophy: a thing's "form" is its essential nature, while "accidents" are features it can have more or less of, or lack, without ceasing to be what it is.

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Toutefois il se peut faire que ie me trompe, & ce n'est peutestre qu'vn peu de cuiure & de verre que ie prens pour de l'or & des diamans. Ie sçay combien nous sommes suiets a nous méprendre en ce qui nous touche, & combien aussy les iugemens de nos amis nous doiuent estre suspects, lorsqu'ils sont en nostre faueur. Mais ie seray bien ayse de faire voir, en ce [4] discours, quels sont les chemins que i'ay suiuis, & d'y representer ma vie comme en vn tableau, affin que chascun en puisse iuger, & qu'apprenant du bruit commun les opinions qu'on en aura, ce soit vn nouueau moyen de m'instruire, que i'adiousteray a ceux dont i'ay coustume de me seruir.

AT 4 Ainsi mon dessein n'est pas d'enseigner icy la Methode que chascun doit suiure pour bien conduire sa raison, mais seulement de faire voir en quelle sorte i'ay tasché de conduire la miene. Ceux qui se meslent de donner des preceptes, se doiuent estimer plus habiles que ceux ausquels ils les donnent ; & s'ils manquent en la moindre chose, ils en sont blasmables. Mais, ne proposant cet escrit que comme vne histoire, ou, si vous l'aymez mieux, que comme vne fable, en laquelle, parmi quelques exemples qu'on peut imiter, on en trouuera peutestre aussy plusieurs autres qu'on aura raison de ne pas suiure, i'espere qu'il sera vtile a quelques vns, sans estre nuisible a personne, & que tous me sçauront gré de ma franchise.

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Yet it may be that I am mistaken, and that what I take for gold and diamonds is perhaps only a little copper and glass. I know how liable we are to err in matters that concern ourselves, and how suspect, too, the judgments of our friends must be to us when they are in our favor. But I will be very glad to show, in this [4] discourse, what paths I have followed, and to depict my life in it as in a painting, so that everyone may judge it. Then, learning from common report the opinions people have of it, I will have a new means of instructing myself, to add to those I am accustomed to use.

Thus my purpose here is not to teach the method that everyone must follow in order to conduct his reason well, but only to show in what way I have tried to conduct my own. Those who take it upon themselves to give precepts must think themselves more skillful than those to whom they give them, and if they fall short in the slightest thing, they are to blame. But since I am offering this writing only as a story—or, if you prefer, as a fable—in which, among some examples one may imitate, one will perhaps also find several others that one would be right not to follow, I hope it will be useful to some without being harmful to anyone, and that all will be grateful to me for my frankness.

A DISAPPOINTING EDUCATION

Descartes recalls his schooling and weighs what each subject taught him, finding none of it certain.

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I'ay esté nourri aux lettres dés mon enfance, & pource qu'on me persuadoit que, par leur moyen, on pouuoit acquerir vne connoissance claire & assurée de tout ce qui est vtile a la vie, i'auois vn extreme desir de les apprendre. Mais sitost que i'eu acheué tout ce cours d'estudes, au bout duquel on a coustume d'estre receu au rang des doctes, ie changeay entierement d'opinion. Car ie me trouuois embarassé de tant de doutes & d'erreurs, qu'il me sembloit n'auoir fait autre profit, en taschant de m'instruire, sinon que i'auois découuert de plus en plus mon ignorance.

Et neanmoins [5] i'estois en l'vne des plus celebres escholes de l'Europe, où ie pensois qu'il deuoit y auoir de sçauans hommes, s'il y en auoit en aucun endroit de la terre. I'y

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I was brought up on letters from my childhood, and because I was persuaded that by means of them one could acquire a clear and assured knowledge of everything useful in life, I had an intense desire to learn them. But as soon as I had completed the whole course of study at the end of which one is usually admitted to the ranks of the learned, I changed my opinion entirely. For I found myself entangled in so many doubts and errors that it seemed to me I had gained nothing from trying to educate myself, except that I had discovered more and more of my own ignorance.[3]

And yet [5] I was at one of the most celebrated schools in Europe, where I thought there must be learned men if there were any anywhere on earth.

3 "Letters" (*lettres*): the humanistic curriculum of languages, literature, history and philosophy.

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auois appris tout ce que les autres y apprenoient ; & mesme, ne m'estant pas contenté des sciences qu'on nous enseignoit, i'auois parcouru tous les liures, traitans de celles qu'on estime les plus curieuses & les plus rares, qui auoient pû tomber entre mes mains. Auec cela, ie sçauois les iugemens que les autres faisoient de moy ; & ie ne voyois point qu'on m'estimast inferieur a mes condisciples, bien qu'il y en eust desia entre eux quelques vns, qu'on destinoit a remplir les places de nos maistres.

AT 5 Et enfin nostre siecle me sembloit aussy fleurissant, & aussy fertile en bons esprits, qu'ait esté aucun des precedens. Ce qui me faisoit prendre la liberté de iuger par moy de tous les autres, & de penser qu'il n'y auoit aucune doctrine dans le monde, qui fust telle qu'on m'auoit auparauant fait esperer.

Ie ne laissois pas toutefois d'estimer les exercices, ausquels on s'occupe dans les escholes. Ie sçauois que les langues, qu'on y apprent, sont necessaires pour l'intelligence des liures anciens ; que la gentillesse des fables resueille l'esprit ; que les actions memorables des histoires le releuent, & qu'estant leuës auec discretion, elles aydent a former le iugement ; que la lecture de tous les bons liures est comme vne conuersation auec les plus honnestes gens des siecles passez, qui en ont esté les autheurs, & mesme vne conuersation estudiée, en laquelle ils ne nous découurent que les meilleures de leurs pensées ; que l'Eloquence a des forces & des beautez incomparables ; que la Poësie a des [6] delicatesses & des douceurs tres rauissantes ;

AT 6 que les Mathematiques ont des inuentions tres subtiles, & qui peuuent beaucoup seruir, tant a contenter les curieux, qu'a faciliter tous les arts, & diminuer le trauail des hommes ; que les escris qui traitent des meurs contienent plusieurs enseignemens, & plusieurs exhortations a la vertu qui sont fort vtiles ; que la Theologie enseigne a gaigner le ciel ; que la Philosophie donne moyen de parler vraysemblablement de toutes choses, & se faire admirer des moins sçauans ; que la Iurisprudence, la Medecine & les autres sciences apportent des honneurs & des richesses a ceux qui les cultiuent ; et enfin, qu'il est bon de les auoir toutes examinées, mesme les plus superstitieuses & les plus fausses, affin de connoistre leur iuste valeur, & se garder d'en estre trompé.

Mais ie croyois auoir desia donné assez de tems aux langues, & mesme aussy a la lecture des liures anciens, &

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I had learned there everything the others learned; and indeed, not content with the sciences we were taught, I had gone through all the books that had come into my hands dealing with those sciences considered the most curious and the rarest. Besides that, I knew the judgments others made of me, and I did not see that I was considered inferior to my fellow students, even though there were already some among them who were destined to fill our teachers' places.[4]

And finally, our age seemed to me as flourishing, and as fertile in good minds, as any before it. This led me to take the liberty of judging all others by myself, and of thinking that there was no body of learning in the world such as I had previously been led to hope for.

I did not, however, cease to value the exercises with which the schools are occupied. I knew that the languages learned there are necessary for understanding the books of the ancients; that the charm of fables awakens the mind; that the memorable deeds recorded in histories elevate it, and that, read with discernment, they help to form the judgment; that reading all good books is like a conversation with the finest people of past centuries, who were their authors—indeed a studied conversation, in which they reveal to us only the best of their thoughts; that eloquence has incomparable power and beauty; that poetry has [6] most ravishing delicacy and sweetness;

that mathematics contains very subtle inventions, which can do much to satisfy the curious as well as to further all the arts and lessen human labor; that writings dealing with morals contain many teachings and many exhortations to virtue that are very useful; that theology teaches how to gain heaven; that philosophy provides the means to speak plausibly about all things and to win the admiration of the less learned; that law, medicine and the other sciences bring honors and riches to those who cultivate them; and finally, that it is good to have examined them all, even the most superstitious and the most false, in order to know their true worth and guard against being deceived by them.

But I believed I had already given enough time to languages, and also to reading the books of the an-

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a leurs histoires, & a leurs fables. Car c'est quasi le mesme de conuerser auec ceux des autres siecles, que de voyasger. Il est bon de sçauoir quelque chose des meurs de diuers peuples, affin de iuger des nostres plus sainement, & que nous ne pensions pas que tout ce qui est contre nos modes soit ridicule, & contre raison, ainsi qu'ont coustume de faire ceux qui n'ont rien vû.

Mais lorsqu'on employe trop de tems a voyasger, on deuient enfin estranger en son païs ; & lorsqu'on est trop curieux des choses qui se pratiquoient aux siecles passez, on demeure ordinairement fort ignorant de celles qui se pratiquent en cetuycy.

Outre que les fables font imaginer plusieurs [7] euenemens comme possibles qui ne le sont point ; et que mesme les histoires les plus fideles, si elles ne changent ny n'augmentent la valeur des choses, pour les rendre plus dignes d'estre leuës, au moins en omettent elles presque tousiours les plus basses & moins illustres circonstances : d'où vient que le reste ne paroist pas tel qu'il est, & que ceux qui reglent leurs meurs par les exemples qu'ils en tirent, sont suiets a tomber dans les extrauagances des Paladins de nos romans, & a conceuoir des desseins qui passent leurs forces.

AT 7 I'estimois fort l'Eloquence, & i'estois amoureux de la Poësie ; mais ie pensois que l'vne & l'autre estoient des dons de l'esprit, plutost que des fruits de l'estude. Ceux qui ont le raisonnement le plus fort, & qui digerent le mieux leurs pensées, affin de les rendre claires & intelligibles, peuuent tousiours le mieux persuader ce qu'ils proposent, encore qu'ils ne parlassent que bas Breton, & qu'ils n'eussent iamais apris de Rhetorique. Et ceux qui ont les inuentions les plus agreables, & qui les sçauent exprimer auec le plus d'ornement & de douceur, ne lairroient pas d'estre les meilleurs Poëtes, encore que l'art Poëtique leur fust inconnu.

Ie me plaisois surtout aux Mathematiques, a cause de la certitude & de l'euidence de leurs raisons ; mais ie ne remarquois point encore leur vray vsage, & pensant qu'elles ne seruoient qu'aux Arts Mechaniques, ie m'estonnois de ce que, leurs fondemens estans si fermes & si solides, on n'auoit rien basti dessus de plus releué. Comme, au contraire, ie comparois les escris des anciens payens, qui traitent des meurs, a des palais [8] fort

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cients, their histories and their fables. For conversing with those of other centuries is almost the same as traveling. It is good to know something of the customs of various peoples, so as to judge our own more soundly, and not to think that everything contrary to our ways is ridiculous and against reason, as those who have seen nothing usually do.

But when one spends too much time traveling, one ends up a stranger in one's own country; and when one is too curious about things practiced in past centuries, one usually remains quite ignorant of those practiced in this one.

Besides, fables make us imagine many [7] events as possible that are not. And even the most faithful histories, if they do not alter or exaggerate the importance of things to make them more worth reading, at least almost always omit the humblest and least illustrious circumstances. As a result, the rest does not appear as it is, and those who govern their conduct by the examples they draw from them are liable to fall into the extravagances of the knights-errant of our romances, and to conceive plans beyond their powers.[5]

I held eloquence in high esteem, and I was in love with poetry; but I thought both were gifts of the mind rather than fruits of study. Those who reason most powerfully, and who best digest their thoughts to make them clear and intelligible, can always best persuade others of what they propose, even if they spoke only Low Breton and had never learned rhetoric. And those who have the most pleasing inventions and know how to express them with the most ornament and sweetness would still be the best poets, even if the art of poetry were unknown to them.[6]

Above all I delighted in mathematics, because of the certainty and evidence of its reasonings; but I did not yet see its true use. Thinking that it served only the mechanical arts, I was astonished that, its foundations being so firm and solid, nothing more elevated had been built on them. By contrast, I compared the writings of the ancient pagans that

4 The Jesuit college of La Flèche in Anjou, which Descartes attended from about 1607 to 1615.
5 "Knights-errant" renders *Paladins*, the heroes of chivalric romance such as the Charlemagne cycle and *Amadis of Gaul*.
6 Low Breton: the Celtic language of western Brittany, which Descartes's readers would have regarded as a rustic dialect.

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superbes & fort magnifiques, qui n'estoient bastis que sur du sable & sur de la bouë.

AT 8 Ils esleuent fort haut les vertus, & les font paroistre estimables par dessus toutes les choses qui sont au monde ; mais ils n'enseignent pas assez a les connoistre, & souuent ce qu'ils appelent d'vn si beau nom, n'est qu'vne insensibilité, ou vn orgueil, ou vn desespoir, ou vn parricide.

Ie reuerois nostre Theologie, & pretendois, autant qu'aucun autre, a gaigner le ciel ; mais ayant apris, comme chose tres assurée, que le chemin n'en est pas moins ouuert aux plus ignorans qu'aux plus doctes, & que les veritez reuelées, qui y conduisent, sont au dessus de nostre intelligence, ie n'eusse osé les soumettre a la foiblesse de mes raisonnemens, & ie pensois que, pour entreprendre de les examiner & y reussir, il estoit besoin d'auoir quelque extraordinaire assistence du ciel, & d'estre plus qu'homme.

Ie ne diray rien de la Philosophie, sinon que, voyant qu'elle a esté cultiuée par les plus excellens esprits qui ayent vescu depuis plusieurs siecles, & que neanmoins il ne s'y trouue encore aucune chose dont on ne dispute, & par consequent qui ne soit douteuse, ie n'auois point assés de presomption pour esperer d'y rencontrer mieux que les autres ; et que, considerant combien il peut y auoir de diuerses opinions, touchant vne mesme matiere, qui soient soustenuës par des gens doctes, sans qu'il y en puisse auoir iamais plus d'vne seule qui soit vraye, ie reputois presque pour faux tout ce qui n'estoit que vraysemblable.

Puis, pour les autres sciences, d'autant qu'elles empruntent leurs principes de la Philosophie, ie iugeois [9] qu'on ne pouuoit auoir rien basti, qui fust solide, sur des fondemens si peu fermes. Et ny l'honneur, ny le gain qu'elles promettent, n'estoient suffisans pour me conuier a les apprendre ; car ie ne me sentois point, graces a Dieu, de condition qui m'obligeast à faire vn mestier de la science, pour le soulagement de ma fortune ; et quoy que ie ne fisse pas profession de mespriser la gloire en Cynique, ie faisois neanmoins fort peu d'estat de celle que ie n'esperois point pouuoir acquerir qu'a faux titres.

AT 9 Et enfin, pour les mauuaises doctrines, ie pensois desia connoistre assés ce qu'elles valoient, pour n'estre plus

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deal with morals to very proud and [8] magnificent palaces built only on sand and mud.

They exalt the virtues very highly, and make them appear worthy of esteem above everything else in the world; but they do not teach enough about how to recognize them, and often what they call by so fine a name is nothing but insensibility, or pride, or despair, or parricide.[7]

I revered our theology, and aspired as much as anyone to gain heaven. But having learned, as something quite certain, that the road to it is no less open to the most ignorant than to the most learned, and that the revealed truths that lead there are beyond our understanding, I would not have dared to submit them to the weakness of my reasonings; and I thought that to undertake to examine them, and to succeed, one would need some extraordinary assistance from heaven, and to be more than human.

I will say nothing of philosophy except this. I saw that it had been cultivated by the most excellent minds that have lived for many centuries, and that nevertheless there is still nothing in it that is not disputed and consequently not doubtful; so I was not presumptuous enough to hope to fare better in it than others. And considering how many different opinions there can be on one and the same matter, all upheld by learned people, while there can never be more than one that is true, I regarded as good as false everything that was merely probable.

Then, as for the other sciences, inasmuch as they borrow their principles from philosophy, I judged [9] that nothing solid could have been built on foundations so unsteady. And neither the honor nor the profit they promise was enough to induce me to learn them; for I did not feel myself, thank God, in any condition that obliged me to make a trade of learning to relieve my fortune. And although I did not make a profession of despising glory, like a Cynic, I nevertheless set very little store by the kind of glory I could hope to acquire only under false pretenses.[8]

And finally, as for the bad doctrines, I thought I already knew well enough what they were worth that I was no longer liable to be deceived either by

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suiet a estre trompé, ny par les promesses d'vn Alchemiste, ni par les predictions d'vn Astrologue, ny par les impostures d'vn Magicien, ny par les artifices ou la venterie d'aucun de ceux qui font profession de sçauoir plus qu'ils ne sçauent.	the promises of an alchemist, or by the predictions of an astrologer, or by the impostures of a magician, or by the tricks or boasting of any of those who profess to know more than they do.

THE GREAT BOOK OF THE WORLD

Leaving his books, Descartes travels to learn from the world and then resolves to study himself.

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C'est pourquoy, sitost que l'aage me permit de sortir de la suietion de mes Precepteurs, ie quittay entierement l'estude des lettres. Et me resoluant de ne chercher plus d'autre science, que celle qui se pourroit trouuer en moymesme, ou bien dans le grand liure du monde, i'employay le reste de ma ieunesse à voyasger, a voir des cours & des armées, a frequenter des gens de diuerses humeurs & conditions, a recueillir diuerses experiences, a m'esprouuer moymesme dans les rencontres que la fortune me proposoit, & partout à faire telle reflexion sur les choses qui se presentoient, que i'en pûsse tirer quelque profit.	That is why, as soon as age allowed me to leave the control of my teachers, I entirely abandoned the study of letters. Resolving to seek no knowledge other than what could be found in myself, or else in the great book of the world, I spent the rest of my youth traveling, seeing courts and armies, mixing with people of various temperaments and ranks, gathering various experiences, testing myself in the situations that fortune offered me, and everywhere reflecting on whatever came before me so as to derive some profit from it.
Car il me sembloit que ie pourrois rencontrer beaucoup plus de verité, dans les raisonnemens que chascun fait touchant les affaires qui luy importent, & dont l'euenement [10] le doit punir bientost aprés, s'il a mal iugé, que dans ceux que fait vn homme de lettres dans son cabinet, touchant des speculations qui ne produisent aucun effect, & qui ne luy sont d'autre consequence, sinon que peutestre il en tirera d'autant plus de vanité qu'elles seront plus eslolgnées du sens commun, a cause qu'il aura deu employer d'autant plus d'esprit & d'artifice a tascher de les rendre vraysemblables. Et i'auois tousiours vn extreme desir d'apprendre a distinguer le vray d'auec le faux, pour voir clair en mes actions, & marcher auec assurance en cete vie.	For it seemed to me that I could find much more truth in the reasonings each person makes about matters that concern him, and whose outcome [10] will soon punish him if he has judged badly, than in those a scholar makes in his study about speculations that produce no effect and have no consequence for him—except perhaps that he will take all the more pride in them the further they are from common sense, since he will have had to use all the more wit and skill in trying to make them plausible. And I always had an intense desire to learn to distinguish the true from the false, in order to see clearly in my actions and walk with assurance in this life.
AT 10 Il est vray que, pendant que ie ne faisois que considerer les meurs des autres hommes, ie n'y trouuois gueres de quoy m'assurer, & que i'y remarquois quasi autant de diuersité que i'auois fait auparauant entre les opinions des Philosophes. En sorte que le plus grand profit que i'en retirois, estoit que, voyant plusieurs choses qui, bien qu'elles nous semblent fort extrauagantes & ridicules, ne laissent pas d'estre communement receuës & approuuées par d'autres grans peuples, i'apprenois a ne rien croyre trop fermement de ce qui ne m'auoit esté persuadé que	It is true that, while I was merely observing the customs of other people, I found hardly anything in them to make me certain, and I noticed almost as much diversity among them as I had earlier among the opinions of the philosophers. So the greatest profit I drew from it was this: seeing many things that, although they seem to us very extravagant and ridiculous, are nevertheless commonly accepted and approved by other great

7 Perhaps allusions to Stoic impassivity, Cato's suicide, and Brutus's killing of Caesar (or Timoleon's of his brother), all praised by ancient moralists.
8 The Cynics, followers of Diogenes of Sinope (4th century BC), made a show of scorning reputation and social convention.

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par l'exemple & par la coustume ; et ainsi ie me deliurois peu a peu de beaucoup d'erreurs, qui peuuent offusquer nostre lumiere naturelle, & nous rendre moins capables d'entendre raison.

Mais aprés que i'eu employé quelques années a estudier ainsi dans le liure du monde, & a tascher d'acquerir quelque experience, ie pris vn iour resolution d'estudier aussy en moymesme, & d'employer toutes les forces de mon esprit a choysir les chemins que ie deuois suiure. Ce qui me reussit beaucoup [11] mieux, ce me semble, que si ie ne me fusse iamais esloigné, ny de mon païs, ny de mes liures.

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peoples, I learned not to believe too firmly anything I had been persuaded of only by example and custom. And thus I gradually freed myself from many errors that can obscure our natural light and make us less able to listen to reason.[9]

But after I had spent some years studying in this way in the book of the world, and trying to gain some experience, I resolved one day to study within myself as well, and to use all the powers of my mind in choosing the paths I ought to follow. In this I succeeded much [11] better, it seems to me, than if I had never left either my country or my books.

9 "Natural light": Descartes's term for our innate power of knowing, as in the *Meditations*.

Part Two

The principal rules of the method
Shut in a stove-heated room, Descartes resolves to rebuild his beliefs and sets out four rules.

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AT 11 I'estois alors en Allemaigne, ou l'occasion des guerres qui n'y sont pas encore finies m'auoit appelé ; & comme ie retournois du couronnement de l'Empereur vers l'armée, le commencement de l'hyuer m'aresta en vn quartier, ou ne trouuant aucune conuersation qui me diuertist, & n'ayant d'ailleurs, par bonheur, aucuns soins ny passions qui me troublassent, ie demeurois tout le iour enfermé seul dans vn poësle, ou i'auois tout loysir de m'entretenir de mes pensées. Entre lesquelles, l'vne des premieres fut que ie m'auisay de considerer, que souuent il n'y a pas tant de perfection dans les ouurages composez de plusieurs pieces, & faits de la main de diuers maistres, qu'en ceux ausquels vn seul a trauaillé.

Ainsi voit on que les bastimens qu'vn seul Architecte a entrepris & acheuez, ont coustume d'estre plus beaux & mieux ordonnez, que ceux que plusieurs ont tasché de racommoder, en faisant seruir de vieilles murailles qui auoient esté basties a d'autres fins.

Ainsi ces ancienes citez, qui, n'ayant esté au commencement que des bourgades, sont deuenuës, par succession de tems, de grandes villes, sont ordinairement si mal compassées, au pris de ces places regulieres qu'vn Ingenieur trace a sa fantaisie dans vne plaine, qu'encore que, considerant leurs edifices chascun a part, on y trouue souuent autant ou plus d'art qu'en ceux des autres, toutefois, a voir comme ils sont arrangez, icy vn grand, là vn petit, & comme ils rendent les rues courbées & inesgales, on [12] diroit que c'est plutost la fortune, que la volonté de quelques hommes vsans de raison, qui les a ainsi disposez.

AT 12 Et si on considere qu'il y a eu neanmoins de tout tems quelques officiers, qui ont eu charge de prendre garde aux bastimens des particuliers, pour les faire seruir a l'ornement du public, on connoistra bien qu'il est malaysé, en ne trauaillant que sur les ouurages d'autruy, de faire des choses fort accomplies. Ainsi ie m'imaginay

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I was then in Germany, where I had been drawn by the wars that are not yet over there. As I was returning to the army from the Emperor's coronation, the onset of winter held me up in quarters where, finding no conversation to divert me, and having besides, by good fortune, no cares or passions to trouble me, I stayed all day shut up alone in a stove-heated room, where I had all the leisure in the world to converse with my own thoughts. Among them, one of the first was that I took it into my head to consider that there is often less perfection in works composed of several parts and made by the hands of various masters than in those on which one person alone has worked.[1]

Thus we see that buildings undertaken and completed by a single architect are usually more beautiful and better ordered than those that several people have tried to patch up, making use of old walls that had been built for other purposes.

Thus, too, those ancient cities that began as mere villages and became great towns in the course of time are usually so badly laid out, compared with the regular places an engineer traces on a plain as he pleases, that—although, considering their buildings one by one, one often finds as much art in them as in those of other towns, or more—yet seeing how they are arranged, a large one here, a small one there, and how they make the streets crooked and uneven, one [12] would say that it was chance, rather than the will of some people using reason, that arranged them so.

And if we consider that there have nevertheless always been officials charged with overseeing private buildings so as to make them serve as ornaments to the public, we will readily see that it is hard to make things very accomplished by work-

1 The Thirty Years' War (1618–48). Descartes had attended the coronation of Emperor Ferdinand II at Frankfurt in 1619 and spent that winter near Ulm.

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que les peuples qui, ayant esté autrefois *[à demi non civilisés]*, & ne s'estant ciuilisez que peu a peu, n'ont fait leurs loix qu'a mesure que l'incommodité des crimes & des querelles les y a contrains, ne sçauroient estre si bien policez que ceux qui, dés le commencement qu'ils se sont assemblez, ont obserué les constitutions de quelque prudent Legislateur.

Comme il est bien certain que l'estat de la vraye Religion, dont Dieu seul a fait les ordonnances, doit estre incomparablement mieux réglé que tous les autres. Et pour parler des choses humaines, ie croy que, si Sparte a esté autrefois tres florissante, ce n'a pas esté a cause de la bonté de chascune de ses loix en particulier, vû que plusieurs estoient fort estranges, & mesme contraires aux bonnes meurs, mais a cause que, n'ayant esté inuentées que par vn seul, elles tendoient toutes a mesme fin.

Et ainsi ie pensay que les sciences des liures, au moins celles dont les raisons ne sont que probables, & qui n'ont aucunes demonstrations, s'estant composées & grossies peu a peu des opinions de plusieurs diuerses personnes, ne sont point si approchantes de la verité, que les simples raisonnemens que peut faire naturellement vn homme [13] de bon sens touchant les choses qui se présentent.

AT 13 Et ainsi encore ie pensay que, pource que nous auons tous esté enfans auant que d'estre hommes, & qu'il nous a fallu long tems estre gouuernez par nos appetis & nos Precepteurs, qui estoient souuent contraires les vns aux autres, & qui, ny les vns ny les autres, ne nous conseilloient peutestre pas tousiours le meilleur, il est presqu'impossible que nos iugemens soient si purs, ny si solides qu'ils auroient esté, si nous auions eu l'vsage entier de nostre raison dés le point de nostre naissance, & que nous n'eussions iamais esté conduits que par elle.

Il est vray que nous ne voyons point qu'on iette par terre toutes les maisons d'vne ville, pour le seul dessein de les refaire d'autre façon, & d'en rendre les ruës plus belles ; mais on voit bien que plusieurs font abatre les leurs pour les rebastir, & que mesme quelquefois ils y sont contrains, quand elles sont en danger de tomber d'elles mesmes, & que les fondemens n'en sont pas bien fermes.

A l'exemple de quoy ie me persuaday, qu'il n'y auroit veritablement point d'apparence qu'vn particulier fist

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ing only on the works of others. Thus I imagined that peoples who once lived in a simpler state, and who took up civil life only little by little, making their laws only as the nuisance of crimes and quarrels forced them to, could not be as well ordered as those who, from the moment they first came together, observed the constitutions of some wise lawgiver.

Just as it is quite certain that the state of the true religion, whose ordinances God alone has made, must be incomparably better regulated than all the others. And, to speak of human things, I believe that if Sparta was once very flourishing, this was not because of the goodness of each of its laws in particular—seeing that many were very strange, and even contrary to good morals—but because, having been devised by one man alone, they all tended toward the same end.[2]

And so I thought that the sciences found in books —at least those whose reasonings are only probable and which have no demonstrations—having been composed and swollen little by little from the opinions of many different people, do not come as close to the truth as the simple reasonings that a person [13] of good sense can naturally make about the things that present themselves.

And so, again, I thought that since we have all been children before being adults, and for a long time had to be governed by our appetites and our teachers—which were often contrary to one another, and neither of which perhaps always advised us for the best—it is almost impossible that our judgments should be as pure or as solid as they would have been had we had the full use of our reason from the moment of our birth, and had we never been guided by anything but reason.

It is true that we do not see all the houses of a town being torn down for the sole purpose of rebuilding them in another fashion and making the streets more beautiful. But we do see many people having their own houses pulled down in order to rebuild them, and even being forced to at times, when the houses are in danger of falling down by themselves and their foundations are not very firm.

Following this example, I convinced myself that there would truly be no sense in a private indi-

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dessein de reformer vn Estat, en y changeant tout dés les fondemens, & en le renuersant pour le redresser ; ny mesme aussy de reformer le cors des sciences, ou l'ordre establi dans les escholes pour les enseigner ; mais que, pour toutes les opinions que i'auois receuës iusques alors en ma creance, ie ne pouuois mieux faire que d'entreprendre, vne bonne fois, de les en oster, affin d'y en remettre par aprés, ou d'autres meilleures, ou bien les mesmes, lorsque ie les aurois [14] aiustées au niueau de la raison.

AT 14 Et ie creu fermement que, par ce moyen, ie reussirois a conduire ma vie beaucoup mieux que si ie ne bastissois que sur de vieux fondemens, & que ie ne m'appuiasse que sur les principes que ie m'estois laissé persuader en ma ieunesse, sans auoir iamais examiné s'ils estoient vrais. Car, bien que ie remarquasse en cecy diuerses difficultez, elles n'estoient point toutefois sans remede, ny comparables a celles qui se trouuent en la reformation des moindres choses qui touchent le public. Ces grans cors sont trop malaysez a releuer, estant abatus, ou mesme a retenir, estant esbranslez, & leurs cheutes ne peuuent estre que tres rudes.

Puis, pour leurs imperfections, s'ils en ont, comme la seule diuersité qui est entre eux suffit pour assurer que plusieurs en ont, l'vsage les a sans doute fort adoucies ; & mesme il en a euité ou corrigé insensiblement quantité, ausquelles on ne pourroit si bien pouruoir par prudence. Et enfin, elles sont quasi tousiours plus supportables que ne seroit leur changement : en mesme façon que les grans chemins, qui tournoyent entre des montaignes, deuienent peu a peu si vnis & si commodes, a force d'estre frequentez, qu'il est beaucoup meilleur de les suiure, que d'entreprendre d'aller plus droit, en grimpant au dessus des rochers, & descendant iusques au bas des precipices.

C'est pourquoy ie ne sçaurois aucunement approuuer ces humeurs brouillonnes & inquietes, qui, n'estant appelez, ny par leur naissance, ny par leur fortune, au maniement des affaires publiques, ne laissent pas d'y faire tousiours, en idée, quelque nouuelle [15] reformation. Et si ie pensois qu'il y eust la moindre chose en cet escrit, par laquelle on me pûst soupçonner de cete folie, ie serois tres marry de souffrir qu'il fust publié. Iamais mon dessein ne s'est estendu plus auant que de tascher a reformer mes

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vidual planning to reform a State by changing everything in it from the foundations up and overturning it in order to set it right again—nor even to reform the body of the sciences, or the order established in the schools for teaching them. But as for all the opinions I had accepted into my belief up to then, I could do no better than to undertake, once and for all, to remove them, so as to put back afterward either other, better ones, or else the same ones, once I had [14] brought them into line with reason.

And I firmly believed that by this means I would succeed in conducting my life much better than if I built only on old foundations and relied only on the principles I had allowed myself to be persuaded of in my youth, without ever having examined whether they were true. For although I noticed various difficulties in this, they were not without remedy, nor comparable to those found in reforming the least things that affect the public. Those great bodies are too hard to raise up again once they have been thrown down, or even to hold up once they have been shaken, and their falls can only be very violent.

Then, as for their imperfections, if they have any—and the mere diversity among them is enough to assure us that many do—use has no doubt greatly softened them; it has even imperceptibly avoided or corrected a great many that could not be provided for so well by foresight. And finally, they are almost always more bearable than changing them would be, in the same way that the main roads winding among mountains become, little by little, so smooth and convenient through being traveled that it is much better to follow them than to try to go more directly by climbing over rocks and descending to the bottom of precipices.

That is why I cannot at all approve of those meddlesome and restless temperaments who, though called neither by birth nor by fortune to the management of public affairs, are nevertheless always devising, in their heads, some new [15] reform. And if I thought there were the slightest thing in this writing that could make anyone suspect me of such folly, I would be very sorry to allow it to be published. My plan has never gone fur-

2 Sparta's laws were traditionally ascribed to the single lawgiver Lycurgus.

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propres pensées, & de bastir dans vn fons qui est tout a moy.

AT 15 Que si, mon ouurage m'ayant assez pleu, ie vous en fais voir icy le modelle, ce n'est pas, pour cela, que ie veuille conseiller a personne de l'imiter. Ceux que Dieu a mieux partagez de ses graces, auront peutestre des desseins plus releuez ; mais ie crains bien que cetuy-cy ne soit desia que trop hardi pour plusieurs. La seule resolution de se défaire de toutes les opinions qu'on a receuës auparauant en sa creance, n'est pas vn exemple que chascun doiue suiure ; et le monde n'est quasi composé que de deux sortes d'espris ausquels il ne conuient aucunement.

A sçauoir, de ceux qui, se croyans plus habiles qu'ils ne sont, ne se peuuent empescher de precipiter leurs iugemens, ny auoir assez de patience pour conduire par ordre toutes leurs pensées : d'où vient que, s'ils auoient vne fois pris la liberté de douter des principes qu'ils ont receus, & de s'escarter du chemin commun, iamais ils ne pourroient tenir le sentier qu'il faut prendre pour aller plus droit, & demeureroient esgarez toute leur vie.

Puis, de ceux qui, ayant assez de raison, ou de modestie, pour iuger qu'ils sont moins capables de distinguer le vray d'auec le faux, que quelques autres par lesquels ils peuuent estre instruits, doiuent bien plutost se contenter de suiure les opinions de ces autres, qu'en chercher eux mesmes de meilleures.

AT 16 Et pour moy, i'aurois esté sans doute du nombre de ces derniers, si ie n'auois iamais eu qu'vn seul maistre, ou que ie n'eusse point sceu les differences qui ont esté de tout tems entre les opinions des plus doctes.

Mais ayant appris, dés le College, qu'on ne sçauroit rien imaginer de si estrange & si peu croyable, qu'il n'ait esté dit par quelqu'vn des Philosophes ; et depuis, en voyasgeant, ayant reconnu que tous ceux qui ont des sentimens fort contraires aux nostres, ne sont pas, pour cela, barbares ny *[non civilisés]*, mais que plusieurs vsent, autant ou plus que nous, de raison ; et ayant consideré combien vn mesme homme, auec son mesme esprit, estant norri dés son enfance entre des François ou des Allemans, deuient different de ce qu'il seroit, s'il auoit tousiours vescu entre des Chinois ou des Canibales ;

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ther than trying to reform my own thoughts and to build on a foundation that is entirely my own.

If, having been rather pleased with my work, I show you the model of it here, it is not because I want to advise anyone to imitate it. Those whom God has better endowed with his graces will perhaps have loftier plans; but I fear that this one may already be too bold for many. The mere resolution to rid oneself of all the opinions one has previously accepted into one's belief is not an example that everyone should follow. And the world is made up almost entirely of two kinds of minds to whom it is not at all suited.

Namely, those who, believing themselves cleverer than they are, cannot keep from rushing their judgments, nor have enough patience to conduct all their thoughts in order. As a result, if they had once taken the liberty of doubting the principles they had accepted and of leaving the common road, they would never be able to keep to the path one must take to go more directly, and would remain lost all their lives.

Then, those who, having enough reason or modesty to judge that they are less capable of distinguishing the true from the false than certain others by whom they can be taught, ought much rather to be content to follow those others' opinions than to seek better ones themselves.

As for me, I would no doubt have been one of these latter, if I had only ever had a single teacher, or if I had not known the differences that have always existed among the opinions of the most learned.

But I had learned, as early as my school days, that one cannot imagine anything so strange and so unbelievable that it has not been said by one philosopher or another. Since then, in my travels, I had recognized that all those whose views are very contrary to ours are not, for that reason, any less civilized than we are, but that many of them make as much use of reason as we do, or more. And I had considered how one and the same person, with the same mind, brought up from childhood among the French or the Germans, becomes different from what he would be if he had always lived among the Chinese or the peoples of Brazil;[3]

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et comment, iusques aux modes de nos habits, la mesme chose qui nous a plû il a dix ans, & qui nous plaira peutestre encore auant dix ans, nous semble maintenant extrauagante & ridicule : en sorte que c'est bien plus la coustume & l'exemple qui nous persuade, qu'aucune connoissance certaine, & que neanmoins la pluralité des voix n'est pas vne preuue qui vaille rien, pour les veritez vn peu malaysées a découurir, a cause qu'il est bien plus vraysemblable qu'vn homme seul les ait rencontrées que tout vn peuple : ie ne pouuois choisir personne dont les opinions me semblassent deuoir estre preferées a celles des autres, & ie me trouuay comme contraint d'entreprendre moymesme de me conduire.

Mais, comme vn homme qui marche seul & dans les tenebres, ie me resolu d'aller si lentement, & d'vser [17] de tant de circonspection en toutes choses, que, si ie n'auançois que fort peu, ie me garderois bien, au moins, de tomber. Mesme ie ne voulu point commencer a reietter tout a fait aucune des opinions, qui s'estoient pû glisser autrefois en ma creance sans y auoir esté introduites par la raison, que ie n'eusse auparauant employé assez de tems a faire le proiet de l'ouurage que i'entreprenois, & a chercher la vraye Methode pour paruenir a la connoissance de toutes les choses dont mon esprit seroit capable.

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and how, even in the fashions of our clothes, the same thing that pleased us ten years ago, and that will perhaps please us again before ten more years are out, now seems to us extravagant and ridiculous. So it is much more custom and example that persuade us than any certain knowledge; and yet a majority of voices is no proof worth anything for truths that are somewhat hard to discover, because it is much more likely that one person alone has hit on them than a whole people. For all these reasons, I could not choose anyone whose opinions seemed to me preferable to those of others, and I found myself, as it were, forced to undertake to guide myself.

But like a man who walks alone and in the dark, I resolved to go so slowly, and to use [17] such caution in all things, that even if I advanced only very little, I would at least take good care not to fall. I did not even want to begin rejecting entirely any of the opinions that might once have slipped into my belief without having been introduced there by reason, until I had first spent enough time planning the work I was undertaking, and seeking the true method for arriving at the knowledge of everything of which my mind would be capable.

FOUR RULES OF METHOD

Finding logic, geometry and algebra wanting, Descartes adopts four simple rules for directing his thinking.

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AT 17 I'auois vn peu estudié, estant plus ieune, entre les parties de la Philosophie, a la Logique, & entre les Mathematiques, a l'Analyse des Geometres & a l'Algebre, trois ars ou sciences qui sembloient deuoir contribuër quelque chose a mon dessein. Mais, en les examinant, ie pris garde que, pour la Logique, ses syllogismes & la pluspart de ses autres instructions seruent plutost a expliquer a autruy les choses qu'on sçait, ou mesme, comme l'art de Lulle, a parler, sans iugement, de celles qu'on ignore, qu'a les apprendre.

Et bien que elle contiene, en effect, beaucoup de preceptes tres vrais & tres bons, il y en a toutefois tant

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When I was younger I had studied a little, among the branches of philosophy, logic, and among those of mathematics, geometrical analysis and algebra—three arts or sciences that seemed as if they ought to contribute something to my plan. But on examining them, I noticed that, as for logic, its syllogisms and most of its other teachings serve rather to explain to others the things one already knows—or even, like the art of Lull, to speak without judgment about those one does not know—than to learn them.[4]

And although it does in fact contain many very true and very good precepts, there are neverthe-

3 Descartes writes *Canibales*, the name then given to the Tupinambá of Brazil, made famous in France by Montaigne's essay "Of Cannibals" (1580).
4 Ramon Llull (c. 1232–1316), Catalan philosopher, whose "Great Art" combined terms mechanically to generate propositions on any subject.

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d'autres, meslez parmi, qui sont ou nuisibles ou superflus, qu'il est presque aussy malaysé de les en separer, que de tirer vne Diane ou vne Minerue hors d'vn bloc de marbre qui n'est point encore esbauché.

Puis, pour l'Analyse des anciens & l'Algebre des modernes, outre qu'elles ne s'estendent qu'a des matieres fort abstractes, & qui ne semblent d'aucun vsage, la premiere est tousiours si astrainte a la consideration des figures, qu'elle ne peut exercer [18] l'entendement sans fatiguer beaucoup l'imagination ; et on s'est tellement assuieti, en la derniere, a certaines reigles & a certains chiffres, qu'on en a fait vn art confus & obscur, qui embarrasse l'esprit, au lieu d'vne science qui le cultiue. Ce qui fut cause que ie pensay qu'il falloit chercher quelque autre Methode, qui, comprenant les auantages de ces trois, fust exempte de leurs defaux.

AT 18

Et comme la multitude des loix fournist souuent des excuses aux vices, en sorte qu'vn Estat est bien mieux reiglé, lorsque, n'en ayant que fort peu, elles y sont fort estroitement obseruées ; ainsi, au lieu de ce grand nombre de preceptes dont la Logique est composée, ie creu que i'aurois assez des quatre suiuans, pouruû que ie prisse vne ferme & constante resolution de ne manquer pas vne seule fois a les obseruer.

Le premier estoit de ne receuoir iamais aucune chose pour vraye, que ie ne la connusse euidemment estre telle : c'est a dire, d'euiter soigneusement la Precipitation, & la Preuention ; & de ne comprendre rien de plus en mes iugemens, que ce qui se presenteroit si clairement & si distindement a mon esprit, que ie n'eusse aucune occasion de le mettre en doute.

Le second, de diuiser chascune des difficultez que i'examinerois, en autant de parcelles qu'il se pourroit, & qu'il seroit requis pour les mieux resoudre.

Le troisiesme, de conduire par ordre mes pensées, en commençant par les obiets les plus simples & les plus aysez a connoistre, pour monter peu a peu, comme par degrez, iusques a la connoissance des plus composez ; et supposant mesme de l'ordre entre ceux [19] qui ne se precedent point naturellement les vns les autres.

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less so many others mixed in with them that are either harmful or superfluous that it is almost as hard to separate them as to draw a Diana or a Minerva out of a block of marble that has not yet even been roughed out.

Then, as for the analysis of the ancients and the algebra of the moderns: besides the fact that they extend only to very abstract matters that seem to be of no use, the former is always so tied to the consideration of figures that it cannot exercise [18] the intellect without greatly tiring the imagination; and in the latter, people have so subjected themselves to certain rules and certain symbols that they have made of it a confused and obscure art that encumbers the mind, instead of a science that cultivates it. This is why I thought I had to seek some other method which, while combining the advantages of these three, would be free of their defects.

And just as a multitude of laws often furnishes excuses for vices, so that a State is much better governed when it has very few laws and they are very strictly observed, so, in place of the great number of precepts of which logic is composed, I believed that the following four would be enough for me, provided I made a firm and constant resolution never once to fail to observe them.

The first was never to accept anything as true that I did not know evidently to be so: that is, carefully to avoid precipitation and prejudice, and to include nothing more in my judgments than what presented itself so clearly and so distinctly to my mind that I had no occasion to call it into doubt.[5]

The second, to divide each of the difficulties I examined into as many parts as possible, and as might be required to resolve them better.

The third, to conduct my thoughts in order, beginning with the simplest objects and the easiest to know, so as to rise little by little, as if by steps, to the knowledge of the most composite; and even supposing an order among those [19] that do not naturally precede one another.

5 "Precipitation" is judging too hastily; "prejudice" (*prévention*) is judging on the basis of opinions formed beforehand.

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Et le dernier, de faire partout des denombremens si entiers, & des reueuës si generales, que ie fusse assuré de ne rien omettre.

Ces longues chaisnes de raisons, toutes simples & faciles, dont les Geometres ont coustume de se seruir, pour paruenir a leurs plus difficiles demonstrations, m'auoient donné occasion de m'imaginer que toutes les choses, qui peuuent tomber sous la connoissance des hommes, s'entresuiuent en mesme façon, & que, pouruû seulement qu'on s'abstiene d'en receuoir aucune pour vraye qui ne le soit, & qu'on garde tousiours l'ordre qu'il faut, pour les deduire les vnes des autres, il n'y en peut auoir de si esloignées, ausquelles enfin on ne paruiene, ny de si cachées qu'on ne découure.

Et ie ne fus pas beaucoup en peine de chercher par lesquelles il estoit besoin de commencer : car ie sçauois desia que c'estoit par les plus simples & les plus aysées a connoistre ; & considerant qu'entre tous ceux qui ont cy deuant recherché la verité dans les sciences, il n'y a eu que les seuls Mathematiciens qui ont pû trouuer quelques demonstrations, c'est a dire quelques raisons certaines & euidentes, ie ne doutois point que ce ne fust par les mesmes qu'ils ont examinées ; bien que ie n'en esperasse aucune autre vtilité, sinon qu'elles accoustumeroient mon esprit a se repaistre de veritez, & ne se contenter point de fausses raisons.

Mais ie n'eu pas dessein, pour cela, de tascher d'apprendre toutes ces sciences particulieres, qu'on nomme communement Mathematiques ; & [20] voyant qu'encore que leurs obiets soient differens, elles ne laissent pas de s'accorder toutes, en ce qu'elles n'y considerent autre chose que les diuers rappors ou proportions qui s'y trouuent, ie pensay qu'il valoit mieux que i'examinasse seulement ces proportions en general, & sans les supposer que dans les suiets qui seruiroient a m'en rendre la connoissance plus aysée ; mesme aussy sans les y astreindre aucunement, affin de les pouuoir d'autant mieux appliquer aprés a tous les autres ausquels elles conuiendroient.

AT 20 Puis, ayant pris garde que, pour les connoistre, i'aurois quelquefois besoin de les considerer chascune en particulier, & quelquefois seulement de les retenir, ou de les comprendre plusieurs ensemble, ie pensay que, pour les considerer mieux en particulier, ie les deuois supposer en des lignes, a cause que ie ne trouuois rien de plus simple, ny que ie pûsse plus distinctement representer a mon imagination & a mes sens ; mais que, pour les retenir, ou les comprendre plusieurs ensemble, il falloit

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And the last, to make enumerations so complete, and reviews so comprehensive, everywhere, that I would be sure of leaving nothing out.

Those long chains of reasonings, all simple and easy, which geometers customarily use to reach their most difficult demonstrations, had given me occasion to imagine that all the things that can fall within human knowledge follow from one another in the same way. And I imagined that, provided only that one refrains from accepting any of them as true that is not, and that one always keeps the order needed to deduce them from one another, there can be none so remote that one cannot eventually reach it, nor so hidden that one cannot discover it.

Nor was I much at a loss to find which ones I needed to begin with: for I already knew that it was with the simplest and easiest to know. And considering that, among all those who have hitherto sought truth in the sciences, only the mathematicians have been able to find any demonstrations—that is, any certain and evident reasons—I did not doubt that I should begin with the same things they examined, although I expected no other benefit from them than that they would accustom my mind to feed on truths and not to be content with false reasons.

But I did not intend, for all that, to try to learn all those particular sciences commonly called mathematics. [20] Seeing that, although their objects are different, they nevertheless all agree in considering nothing in them but the various relations or proportions found there, I thought it better to examine only these proportions in general, supposing them only in subjects that would serve to make knowing them easier for me—yet without restricting them to those subjects in any way, so as to be able to apply them all the better afterward to all the others to which they might apply.

Then, having noticed that in order to know them I would sometimes need to consider each one separately, and sometimes only to keep them in mind, or to grasp several of them together, I thought that, to consider them better separately, I ought to suppose them in lines, because I found nothing simpler, nor anything I could represent more distinctly to my imagination and my senses. But to keep them in mind, or to grasp several together, I

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que ie les expliquasse par quelques chiffres, les plus courts qu'il seroit possible ; et que, par ce moyen, i'emprunterois tout le meilleur de l'Analyse Geometrique & de l'Algebre, & corrigerois tous les defaus de l'vne par l'autre.

Comme, en effect, i'ose dire que l'exacte obseruation de ce peu de preceptes que i'auois choisis, me donna telle facilité a demesler toutes les questions ausquelles ces deux sciences s'estendent, qu'en deux ou trois mois que i'employay a les examiner, ayant commencé par les plus simples & plus generales, & chasque verité que ie trouuois estant vne reigle qui me [21] seruoit aprés a en trouuer d'autres, non seulement ie vins a bout de plusieurs que i'auois iugées autrefois tres difficiles, mais il me sembla aussy, vers la fin, que ie pouuois determiner, en celles mesme que i'ignorois, par quels moyens, & iusques où, il estoit possible de les resoudre.

AT 21 En quoy ie ne vous paroistray peutestre pas estre fort vain, si vous considerez que, n'y ayant qu'vne verité de chasque chose, quiconque la trouue en sçait autant qu'on en peut sçauoir ; et que, par exemple, vn enfant instruit en l'Arithmetique, ayant fait vne addition suiuant ses reigles, se peut assurer d'auoir trouué, touchant la somme qu'il examinoit, tout ce que l'esprit humain sçauroit trouuer. Car enfin la Methode qui enseigne a suiure le vray ordre, & a denombrer exactement toutes les circonstances de ce qu'on cherche, contient tout ce qui donne de la certitude aux reigles d'Arithmetique.

Mais ce qui me contentoit le plus de cete Methode, estoit que, par elle, i'estois assuré d'vser en tout de ma raison, sinon parfaitement, au moins le mieux qui fust en mon pouuoir ; outre que ie sentois, en la prattiquant, que mon esprit s'accoustumoit peu a peu a conceuoir plus netement & plus distinctement ses obiets, & que, ne l'ayant point assuiettie a aucune matiere particuliere, ie me promettois de l'appliquer aussy vtilement aux difficultez des autres sciences, que i'auois fait a celles de l'Algebre. Non que, pour cela, i'osasse entreprendre d'abord d'examiner toutes celles qui se presenteroient ; car cela mesme eust esté contraire a l'ordre qu'elle prescrit.

Mais, ayant pris garde que leurs principes deuoient tous estre empruntez de [22] la Philosophie, en laquelle ie n'en

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had to express them by certain symbols, as short as possible. And by this means I would borrow all the best of geometrical analysis and of algebra, and correct all the defects of the one by the other.[6]

And in fact, I dare say that the exact observance of these few precepts I had chosen gave me such ease in unraveling all the questions to which these two sciences extend that, in the two or three months I spent examining them—having begun with the simplest and most general, and each truth I found being a rule that [21] then helped me find others—not only did I succeed with many that I had once judged very difficult, but it also seemed to me, toward the end, that I could determine, even in those I did not know, by what means and how far it was possible to solve them.

In this I will perhaps not seem to you very vain, if you consider that, since there is only one truth about each thing, whoever finds it knows as much about it as can be known. For example, a child who has been taught arithmetic and has done an addition according to its rules can be sure of having found, concerning the sum he was examining, everything that the human mind could find. For, after all, the method that teaches us to follow the true order, and to enumerate exactly all the circumstances of what we are seeking, contains everything that gives certainty to the rules of arithmetic.

But what pleased me most about this method was that by it I was assured of using my reason in everything, if not perfectly, at least as well as was in my power. Besides, I felt, in practicing it, that my mind was gradually growing accustomed to conceiving its objects more clearly and more distinctly; and since I had not tied the method to any particular subject matter, I promised myself that I would apply it as usefully to the difficulties of the other sciences as I had to those of algebra. Not that I dared, for all that, to undertake right away to examine all those that presented themselves; for that itself would have been contrary to the order it prescribes.

But having noticed that their principles must all be borrowed from [22] philosophy, in which I still found none that were certain, I thought that above

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trouuois point encore de certains, ie pensay qu'il faloit, auant tout, que ie taschasse d'y en establir ; & que, cela estant la chose du monde la plus importante, & où la Precipitation & la Preuention estoient le plus a craindre, ie ne deuois point entreprendre d'en venir a bout, que ie n'eusse attaint vn aage bien plus meur que celuy de vingt trois ans, que i'auois alors ; et que ie n'eusse, auparauant, employé beaucoup de tems a m'y preparer, tant en deracinant de mon esprit toutes les mauuaises opinions que i'y auois receuës auant ce tems là, qu'en faisant amas de plusieurs experiences, pour estre aprés la matiere de mes raisonnemens, & en m'exerçant tousiours en la Methode que ie m'estois prescrite, affin de m'y affermir de plus en plus.

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all I must try to establish some there. And since this was the most important thing in the world, and the one where precipitation and prejudice were most to be feared, I thought I ought not to undertake to accomplish it until I had reached a much more mature age than the twenty-three I then was, and until I had first spent a long time preparing for it—both by uprooting from my mind all the bad opinions I had accepted before that time, and by amassing many experiences to serve afterward as the material of my reasonings, and by constantly practicing the method I had prescribed for myself, so as to become more and more firmly grounded in it.

6 This is the program of Descartes's *Geometry*, published with the *Discourse*, which founded analytic geometry by expressing curves through algebraic equations.

Part Three

Some rules of morals drawn from the method
A provisional moral code to live by while everything else is in doubt.

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AT 22	Et enfin, comme ce n'est pas assez, auant de commencer a rebastir le logis ou on demeure, que de l'abattre, & de faire prouision de materiaux & d'Architectes, ou s'exercer soymesme a l'Architecture, & outre cela d'en auoir soigneusement tracé le dessein ; mais qu'il faut aussy s'estre pouruû de quelque autre, où on puisse estre logé commodement pendant le tems qu'on y trauaillera ; ainsi, affin que ie ne demeurasse point irresolu en mes actions, pendant que la raison m'obligeroit de l'estre en mes iugemens, & que ie ne laissasse pas de viure dés lors le plus hureusement que ie pourrois, ie me formay vne morale par prouision, qui ne consistoit qu'en trois ou quatre maximes, dont ie veux bien vous faire part.	And finally, before beginning to rebuild the house one lives in, it is not enough to pull it down, to lay in materials and architects (or to train oneself in architecture), and, besides that, to have carefully drawn up the plan for it; one must also have provided oneself with some other house where one can be comfortably lodged while the work is going on. In the same way, so that I would not remain irresolute in my actions while reason obliged me to be so in my judgments, and so that I could still live as happily as possible from then on, I formed for myself a provisional morality, consisting of only three or four maxims, which I am glad to share with you.[1]
	La premiere estoit d'obeir aux lois & aux [23] coustumes de mon païs, retenant constanment la religion en laquelle Dieu m'a fait la grace d'estre instruit dés mon enfance, & me gouuernant, en toute autre chose, suiuant les opinions les plus moderées, & les plus esloignées de l'excés, qui fussent communement receuës en pratique par les mieux sensez de ceux auec lesquels i'aurois a viure. Car, commençant dés lors a ne conter pour rien les mienes propres, a cause que ie les voulois remettre toutes a l'examen, i'estois assuré de ne pouuoir mieux que de suiure celles des mieux sensez.	The first was to obey the laws and [23] customs of my country, holding constantly to the religion in which God has given me the grace to be instructed since my childhood, and governing myself in everything else according to the most moderate opinions, those furthest from excess, that were commonly accepted in practice by the most sensible of the people with whom I would have to live. For since I was beginning from then on to count my own opinions as nothing, because I wanted to submit them all to examination, I was sure I could do no better than to follow those of the most sensible people.
AT 23	Et encore qu'il y en ait peutestre d'aussy bien sensez, parmi les Perses ou les Chinois, que parmi nous, il me sembloit que le plus vtile estoit de me regler selon ceux auec lesquels i'aurois a viure ; et que, pour sçauoir quelles estoient veritablement leurs opinions, ie deuois plutost prendre garde a ce qu'ils prattiquoient qu'a ce qu'ils disoient ; non seulement a cause qu'en la corruption de nos mœurs il y a peu de gens qui veuillent dire tout ce qu'ils croyent, mais aussy a cause que plusieurs l'ignorent eux mesmes ; car l'action de la	And although there may perhaps be people just as sensible among the Persians or the Chinese as among us, it seemed to me that the most useful course was to regulate myself by those with whom I would have to live; and that, to know what their opinions really were, I ought to pay attention to what they did rather than to what they said. This was not only because, in the corruption of our morals, few people are willing to say everything they believe, but also because many do not know

1 "Provisional morality" (*morale par provision*): a code of conduct to live by in the meantime, while all his beliefs are under review.

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pensée par laquelle on croit vne chose, estant differente de celle par laquelle on connoist qu'on la croit, elles sont souuent l'vne sans l'autre.

Et entre plusieurs opinions esgalement receuës, ie ne choisissois que les plus moderées : tant a cause que ce sont tousiours les plus commodes pour la prattique, & vraysemblablement les meilleures, tous excés ayant coustume d'estre mauuais ; comme aussy affin de me détourner moins du vray chemin, en cas que ie faillisse, que si, ayant choisi l'vn des extremes, c'eust esté l'autre qu'il eust fallu suiure. Et, [24] particulierement, ie mettois entre les excés toutes les promesses par lesquelles on retranche quelque chose de sa liberté.

AT 24 Non que ie desaprouuasse les lois qui, pour remedier a l'inconstance des esprits foibles, permettent, lorsqu'on a quelque bon dessein, ou mesme, pour la seureté du commerce, quelque dessein qui n'est qu'indifferent, qu'on face des vœux ou des contrats qui obligent a y perseuerer ; mais a cause que ie ne voyois au monde aucune chose qui demeurast tousiours en mesme estat, & que, pour mon particulier, ie me promettois de perfectionner de plus en plus mes iugemens, & non point de les rendre pires, i'eusse pensé commettre vne grande faute contre le bon sens, si, pour ce que i'approuuois alors quelque chose, ie me fusse obligé de la prendre pour bonne encore aprés, lorsqu'elle auroit peutestre cessé de l'estre, ou que i'aurois cessé de l'estimer telle.

Ma seconde maxime estoit d'estre le plus ferme & le plus resolu en mes actions que ie pourrois, & de ne suiure pas moins constanment les opinions les plus douteuses, lorsque ie m'y serois vne fois determiné, que si elles eussent esté tres assurées.

Imitant en cecy les voyasgeurs qui, se trouuant esgarez en quelque forest, ne doiuent pas errer en tournoyant, tantost d'vn costé, tantost d'vn autre, ny encore moins s'arester en vne place, mais marcher tousiours le plus droit qu'ils peuuent vers vn mesme costé, & ne le changer point pour de foibles raisons, encore que ce n'ait peutestre esté au commencement que le hasard seul qui les ait determinez a le choisir : car, par ce moyen, s'ils ne vont iustement où ils desirent, ils arriueront [25] au moins a la fin quelque part, où vraysemblablement ils seront mieux que dans le milieu d'vne forest.

AT 25 Et ainsi, les actions de la vie ne souffrant souuent aucun delay, c'est vne verité tres certaine que, lorsqu'il n'est pas en nostre pouuoir de discerner les plus vrayes opinions,

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it themselves. For the act of thought by which we believe a thing is different from the act by which we know that we believe it, and so the one often occurs without the other.

And among several opinions equally accepted, I chose only the most moderate: both because these are always the most convenient in practice, and probably the best, since all excess is usually bad; and also so that, if I went wrong, I would stray less far from the true path than if I had chosen one of the extremes when it was the other that I should have followed. And, [24] in particular, I counted as excesses all the promises by which one gives up some part of one's freedom.

Not that I disapproved of the laws which, to remedy the inconstancy of weak minds, allow people to make vows or contracts that oblige them to persevere—when they have some good purpose, or even, for the security of commerce, a purpose that is merely indifferent. But because I saw nothing in the world that always remained in the same state, and because, for my own part, I promised myself to make my judgments more and more perfect, and not to make them worse, I would have thought I was committing a serious error against good sense if, because I approved of something at that time, I had bound myself to take it as good later on too, when it had perhaps ceased to be so, or when I had ceased to regard it as such.

My second maxim was to be as firm and resolute in my actions as I could, and to follow even the most doubtful opinions, once I had decided on them, no less constantly than if they had been completely certain.

In this I imitated travelers who, finding themselves lost in some forest, should not wander about turning this way and that, still less stay in one place, but should always walk as straight as they can in one direction, and not change it for weak reasons, even if at the outset it was perhaps chance alone that made them choose it. For in this way, even if they do not arrive exactly where they want to go, they will [25] at least end up somewhere in the end, where they will probably be better off than in the middle of a forest.

And so, since the actions of life often allow no delay, it is a very certain truth that when it is not in our power to discern the truest opinions, we

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nous deuons suiure les plus probables ; et mesme, qu'encore que nous ne remarquions point dauantage de probabilité aux vnes qu'aux autres, nous deuons neanmoins nous determiner a quelques vnes, & les considerer aprés, non plus comme douteuses, en tant qu'elles se rapportent a la prattique, mais comme tres vrayes & tres certaines, a cause que la raison qui nous y a fait determiner, se trouue telle.

Et cecy fut capable dés lors de me deliurer de tous les repentirs & les remors, qui ont coustume d'agiter les consciences de ces espris foibles & chancelans, qui se laissent aller inconstanment a prattiquer, comme bonnes, les choses qu'ils iugent aprés estre mauuaises.

Ma troisiesme maxime estoit de tascher tousiours plutost a me vaincre que la fortune, & a changer mes desirs que l'ordre du monde ; et generalement, de m'accoustumer a croire qu'il n'y a rien qui soit entierement en nostre pouuoir, que nos pensées, en sorte qu'aprés que nous auons fait nostre mieux, touchant les choses qui nous sont exterieures, tout ce qui manque de nous reussir est, au regard de nous, absolument impossible. Et cecy seul me sembloit estre suffisant pour m'empescher de rien desirer a l'auenir que ie n'acquisse, & ainsi pour me rendre content.

Car nostre volonté ne se portant naturellement a [26] desirer que les choses que nostre entendement luy represente en quelque façon comme possibles, il est certain que, si nous considerons tous les biens qui sont hors de nous comme esgalement esloignez de nostre pouuoir, nous n'aurons pas plus de regret de manquer de ceux qui semblent estre deus a nostre naissance, lorsque nous en serons priuez sans nostre faute, que nous auons de ne posseder pas les royaumes de la Chine ou de Mexique ; & que faisant, comme on dit, de necessité vertu, nous ne desirerons pas dauantage d'estre sains, estant malades, ou d'estre libres, estant en prison, que nous faisons maintenant d'auoir des cors d'vne matiere aussy peu corruptible que les diamans, ou des ailes pour voler comme les oiseaux.

AT 26 Mais i'auouë qu'il est besoin d'vn long exercice, & d'vne meditation souuent reïterée, pour s'accoustumer a regarder de ce biais toutes les choses ; et ie croy que c'est principalement en cecy que consistoit le secret de ces Philosophes, qui ont pû autrefois se soustraire de l'empire de la Fortune, & malgré les douleurs & la pauureté, disputer de la felicité auec leurs Dieux.

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must follow the most probable. And even when we notice no more probability in some than in others, we must nevertheless settle on some of them, and afterward regard them no longer as doubtful, insofar as they bear on practice, but as very true and very certain, because the reason that made us settle on them is itself true and certain.

And this was enough, from then on, to free me from all the regrets and remorse that usually trouble the consciences of those weak and wavering minds who inconstantly allow themselves to act on things as good which they later judge to be bad.

My third maxim was always to try to master myself rather than fortune, and to change my desires rather than the order of the world; and in general, to accustom myself to believing that there is nothing entirely in our power except our thoughts, so that, after we have done our best regarding things outside us, whatever we fail to achieve is, as far as we are concerned, absolutely impossible. And this alone seemed to me enough to keep me from desiring anything in future that I would not obtain, and so to make me content.

For since our will naturally tends to [26] desire only the things that our intellect represents to it as in some way possible, it is certain that if we consider all the goods outside us as equally beyond our power, we will have no more regret at lacking those that seem due to us by birth, when we are deprived of them through no fault of our own, than we have at not possessing the kingdoms of China or Mexico. And making, as they say, a virtue of necessity, we will no more desire to be healthy when we are ill, or to be free when we are in prison, than we now desire to have bodies made of a matter as incorruptible as diamonds, or wings to fly like the birds.

But I admit that long practice and often repeated meditation are needed to accustom oneself to looking at everything from this angle; and I believe that it was chiefly in this that the secret lay of those philosophers who in former times were able to escape the dominion of Fortune and, despite pain and poverty, to rival their gods in happiness.[2]

2 Descartes has in mind chiefly the ancient Stoics, who held that the wise man, whatever his circumstances, is as happy as the gods.

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Car s'occupant sans cesse a considerer les bornes qui leur estoient prescrites par la Nature, ils se persuadoient si parfaitement que rien n'estoit en leur pouuoir que leurs pensées, que cela seul estoit suffisant pour les empescher d'auoir aucune affection pour d'autres choses ; & ils disposoient d'elles si absolument, qu'ils auoient en cela quelque raison de s'estimer plus riches, & plus puissans, & plus libres, & plus hureux, qu'aucun des autres hommes, qui n'ayant point cete Philosophie, tant [27] fauorisez de la Nature & de la Fortune qu'ils puissent estre, ne disposent iamais ainsi de tout ce qu'ils veulent.

AT 27 Enfin, pour conclusion de cete Morale, ie m'auisay de faire vne reueuë sur les diuerses occupations qu'ont les hommes en cete vie, pour tascher a faire chois de la meilleure ; & sans que ie vueille rien dire de celles des autres, ie pensay que ie ne pouuois mieux que de continuër en celle la mesme ou ie me trouuois, c'est a dire, que d'employer toute ma vie a cultiuer ma raison, & m'auancer, autant que ie pourrois, en la connoissance de la verité, suiuant la Methode que ie m'estois prescrite.

I'auois esprouué de si extremes contentemens, depuis que i'auois commencé a me seruir de cete Methode, que ie ne croyois pas qu'on en pust receuoir de plus doux, ny de plus innocens, en cete vie ; et descouurant tous les iours par son moyen quelques veritez, qui me sembloient assez importantes, & communement ignorées des autres hommes, la satisfaction que i'en auois remplissoit tellement mon esprit que tout le reste ne me touchoit point.

Outre que les trois maximes precedentes n'estoient fondées que sur le dessein que i'auois de continuer a m'instruire : car Dieu nous ayant donné a chascun quelque lumiere pour discerner le vray d'auec le faux, ie n'eusse pas creu me deuoir contenter des opinions d'autruy vn seul moment, si ie ne me fusse proposé d'employer mon propre iugement a les examiner, lorsqu'il seroit tems ; et ie n'eusse sceu m'exemter de scrupule, en les suiuant, si ie n'eusse esperé de ne perdre pour cela aucune occasion d'en trouuer de meilleures, en cas qu'il [28] y en eust.

AT 28 Et enfin ie n'eusse sceu borner mes desirs, ny estre content, si ie n'eusse suiui vn chemin par lequel, pensant estre assuré de l'acquisition de toutes les connoissances dont ie serois capable, ie le pensois estre, par mesme moyen, de celle de tous les vrais biens qui seroient iamais en mon pouuoir ; d'autant que, nostre volonté ne se

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For by constantly occupying themselves with considering the limits prescribed to them by Nature, they persuaded themselves so completely that nothing was in their power except their thoughts that this alone was enough to prevent them from having any attachment to other things; and they had such absolute control over their thoughts that in this they had some reason to consider themselves richer, and more powerful, and freer, and happier than any other men, who, lacking this philosophy, however [27] favored by Nature and Fortune they may be, never have such control over everything they wish.

Finally, to conclude this morality, I decided to review the various occupations people have in this life, in order to try to choose the best; and without wishing to say anything about the occupations of others, I thought I could do no better than to continue in the very one I was in—that is, to spend my whole life cultivating my reason and advancing as far as I could in the knowledge of the truth, following the method I had prescribed for myself.

I had experienced such extreme contentment since I had begun to use this method that I did not believe one could receive any sweeter or more innocent in this life; and as I discovered every day, by its means, some truths that seemed to me fairly important and commonly unknown to other people, the satisfaction I took in them so filled my mind that nothing else affected me.

Besides, the three preceding maxims were founded only on the plan I had to go on instructing myself. For since God has given each of us some light to distinguish the true from the false, I would not have thought I ought to be content with other people's opinions for a single moment if I had not intended to use my own judgment to examine them when the time came; and I could not have kept free of scruples in following them if I had not hoped that I would not thereby lose any opportunity of finding better ones, in case there [28] were any.

And finally, I could not have limited my desires, or been content, if I had not followed a path by which, thinking I was assured of acquiring all the knowledge of which I would be capable, I thought I was assured by the same means of acquiring all the true goods that would ever be in my power.

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portant a suiure ny a fuir aucune chose, que selon que nostre entendement la luy represente bonne ou mauuaise, il suffit de bien iuger, pour bien faire, & de iuger le mieux qu'on puisse, pour faire aussy tout son mieux, c'est a dire, pour acquerir toutes les vertus, & ensemble tous les autres biens, qu'on puisse acquerir ; & lorsqu'on est certain que cela est, on ne sçauroit manquer d'estre content.

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For since our will tends to pursue or avoid anything only insofar as our intellect represents it as good or bad, it is enough to judge well in order to do well, and to judge as well as one can in order to do one's best as well—that is, to acquire all the virtues, and with them all the other goods one can acquire; and when one is certain that this is so, one cannot fail to be content.

NINE YEARS OF TRAVEL

Descartes spends nine years rooting out errors and practicing his method before settling in the Netherlands.

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Aprés m'estre ainsi assuré de ces maximes, & les auoir mises a part, auec les veritez de la foy, qui ont tousiours esté les premieres en ma creance, ie iugay que, pour tout le reste de mes opinions, ie pouuois librement entreprendre de m'en defaire. Et d'autant que i'esperois en pouuoir mieux venir a bout, en conuersant auec les hommes, qu'en demeurant plus long tems renfermé dans le poisle ou i'auois eu toutes ces pensées, l'hyuer n'estoit pas encore bien acheué que ie me remis a voyasger.

Et en toutes les neuf années suiuantes, ie ne fi autre chose que rouler çà & là dans le monde, taschant d'y estre spectateur plutost qu'acteur en toutes les Comedies qui s'y iouent ; et faisant particulierement reflexion, en chasque matiere, sur ce qui la pouuoit rendre suspecte, & nous donner occasion de nous mesprendre, ie déracinois cependant de mon esprit toutes les erreurs qui s'y estoient pû [29] glisser auparauant. Non que i'imitasse pour cela les Sceptiques, qui ne doutent que pour douter, & affectent d'estre tousiours irresolus : car, au contraire, tout mon dessein ne tendoit qu'a m'assurer, & a reietter la terre mouuante & le sable, pour trouuer le roc ou l'argile.

AT 29 Ce qui me reussissoit, ce me semble, assez bien, d'autant que, taschant a descouurir la fausseté ou l'incertitude des propositions que i'examinois, non par de foibles coniectures, mais par des raisonnemens clairs & assurez, ie n'en rencontrois point de si douteuses, que ie n'en tirasse tousiours quelque conclusion assez certaine, quand ce n'eust esté que cela mesme qu'elle ne contenoit rien de certain. Et comme en abatant vn vieux logis, on en reserue ordinairement les demolitions, pour seruir a en bastir vn nouueau ; ainsi, en détruisant toutes celles de mes opinions que ie iugeois estre mal fondées, ie faisois diuerses obseruations, & acquerois plusieurs

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Having thus assured myself of these maxims, and set them aside along with the truths of faith, which have always been foremost among my beliefs, I judged that as for all the rest of my opinions, I could freely undertake to rid myself of them. And since I hoped to be better able to accomplish this by conversing with people than by remaining any longer shut up in the stove-heated room where I had had all these thoughts, winter was not yet quite over when I set out traveling again.

And throughout the following nine years I did nothing but roam here and there in the world, trying to be a spectator rather than an actor in all the comedies played out in it. And reflecting particularly, in each matter, on what could make it doubtful and give us occasion to be mistaken, I meanwhile rooted out of my mind all the errors that had been able to [29] slip into it before. Not that in doing so I imitated the Skeptics, who doubt only for the sake of doubting and affect to be always undecided; for, on the contrary, my whole aim was only to reach assurance, and to cast aside the shifting earth and sand in order to find rock or clay.

In this I succeeded fairly well, it seems to me, since, trying to uncover the falsity or uncertainty of the propositions I examined, not by weak conjectures but by clear and assured reasoning, I encountered none so doubtful that I could not always draw some fairly certain conclusion from it, even if only this: that it contained nothing certain. And just as, when an old house is pulled down, the rubble is usually kept to help build a new one, so, in destroying all those of my opinions that I judged to be ill-founded, I made various observa-

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experiences, qui m'ont serui depuis a en establir de plus certaines.

Et de plus, ie continuois a m'exercer en la Methode que ie m'estois prescrite ; car, outre que i'auois soin de conduire generalement toutes mes pensées selon ses reigles, ie me reseruois de tems en tems quelques heures, que i'employois particulierement a la prattiquer en des difficultez de Mathematique, ou mesme aussy en quelques autres que ie pouuois rendre quasi semblables a celles des Mathematiques, en les détachant de tous les principes des autres sciences, que ie ne trouuois pas assez fermes, comme vous verrés que i'ay fait en plusieurs qui sont expliquées en ce volume.

Et ainsi, sans viure d'autre [30] façon, en apparence, que ceux qui, n'ayant aucun employ qu'a passer vne vie douce & innocente, s'estudient a separer les plaisirs des vices, & qui, pour iouir de leur loysir sans s'ennuyer, vsent de tous les diuertissemens qui sont honnestes, ie ne laissois pas de poursuiure en mon dessein, & de profiter en la connoissance de la verité, peutestre plus que si ie n'eusse fait que lire des liures, ou frequenter des gens de lettres.

AT 30 Toutefois ces neuf ans s'escoulerent auant que i'eusse encore pris aucun parti, touchant les difficultés qui ont coustume d'estre disputées entre les doctes, ny commencé a chercher les fondemens d'aucune Philosophie plus certaine que la vulgaire. Et l'exemple de plusieurs excelens espris, qui, en ayant eu cy deuant le dessein, me sembloient n'y auoir pas reussi, m'y faisoit imaginer tant de difficulté, que ie n'eusse peutestre pas encore sitost osé l'entreprendre, si ie n'eusse vû que quelques vns faisoient desia courre le bruit que i'en estois venu a bout.

Ie ne sçaurois pas dire sur quoy ils fondoient cete opinion ; & si i'y ay contribué quelque chose par mes discours, ce doit auoir esté en confessant plus ingenuëment ce que i'ignorois, que n'ont coustume de faire ceux qui ont vn peu estudié, & peutestre aussy en faisant voir les raisons que i'auois de douter de beaucoup de choses que les autres estiment certaines, plutost qu'en me vantant d'aucune doctrine.

Mais ayant le cœur assez bon pour ne vouloir point qu'on me prist pour autre que ie n'estois, ie pensay qu'il faloit que ie taschasse, par tous moyens, a me rendre digne de la reputation [31] qu'on me donnoit ; et il y a iustement

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tions and gathered much experience, which has since helped me to establish more certain ones.

Moreover, I went on practicing the method I had prescribed for myself. For besides taking care to conduct all my thoughts in general according to its rules, I set aside a few hours from time to time, which I spent specifically in applying it to problems in mathematics, or even to some others that I could make almost like those of mathematics by detaching them from all the principles of the other sciences, which I did not find firm enough—as you will see I have done with several that are explained in this volume.[3]

And so, while living, to all appearances, no [30] differently from those who, having no occupation but to lead a pleasant and innocent life, take care to separate pleasures from vices, and who, to enjoy their leisure without boredom, engage in every respectable pastime, I nonetheless went on pursuing my plan and making progress in the knowledge of the truth—perhaps more than if I had done nothing but read books or keep company with men of letters.

Nevertheless, those nine years slipped by before I had yet taken any side on the questions usually disputed among the learned, or begun to look for the foundations of any philosophy more certain than the common one. And the example of many excellent minds who had had this plan before and, it seemed to me, had not succeeded, made me imagine so much difficulty in it that I might not yet have dared to undertake it so soon, had I not seen that some people were already spreading the rumor that I had accomplished it.

I could not say what they based this opinion on; and if I contributed anything to it by my conversation, it must have been by confessing more candidly what I did not know than those who have studied a little usually do, and perhaps also by showing the reasons I had for doubting many things that others consider certain, rather than by boasting of any doctrine.

But having a heart honest enough not to want to be taken for anything other than I was, I thought I must try by every means to make myself worthy of the reputation [31] I was being given. And it is ex-

3 The *Discourse* was published as the preface to three essays in the same volume: the *Optics*, the *Meteorology* and the *Geometry*.

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huit ans, que ce desir me fit resoudre a m'esloigner de tous les lieux ou ie pouuois auoir des connoissances, & a me retirer icy, en vn païs où la longue durée de la guerre a fait establir de tels ordres, que les armées qu'on y entretient ne semblent seruir qu'a faire qu'on y iouisse des fruits de la paix auec d'autant plus de seureté, & où parmi la foule d'vn grand peuple fort actif, & plus soigneux de ses propres affaires, que curieux de celles d'autruy, sans manquer d'aucune des commoditez qui sont dans les villes les plus frequentées, i'ay pû viure aussy solitaire & retiré que dans les desers les plus escartez.	actly eight years ago that this desire made me resolve to move away from all the places where I might have acquaintances and to withdraw here, to a country where the long duration of the war has led to the establishment of such good order that the armies maintained there seem to serve only to let people enjoy the fruits of peace with all the more security; and where, amid the crowd of a great and very active people, more concerned with their own affairs than curious about other people's, I have been able, without lacking any of the conveniences found in the busiest cities, to live as solitary and withdrawn as in the most remote wildernesses.[4]

4 The Dutch Republic, where Descartes settled in 1628–29; the war is the Dutch struggle for independence from Spain (1568–1648).

Part Four

Proofs of God and the human soul
"I think, therefore I am," and the foundations of his metaphysics.

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AT 31	Ie ne sçay si ie doy vous entretenir des premieres meditations que i'y ay faites ; car elles sont si Metaphysiques & si peu communes, qu'elles ne seront peutestre pas au goust de tout le monde. Et toutefois, affin qu'on puisse iuger si les fondemens que i'ay pris sont assez fermes, ie me trouue en quelque façon contraint d'en parler.	I do not know whether I ought to tell you about the first meditations I made there; for they are so metaphysical and so out of the ordinary that they will perhaps not be to everyone's taste. And yet, so that people may judge whether the foundations I have laid are firm enough, I find myself in some way compelled to speak of them.

DOUBTING EVERYTHING

Descartes rejects whatever can be doubted and finds that "I think, therefore I am" survives.

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	I'auois dés long temps remarqué que, pour les meurs, il est besoin quelquefois de suiure des opinions qu'on sçait estre fort incertaines, tout de mesme que si elles estoient indubitables, ainsi qu'il a esté dit cy-dessus ; mais, pourcequ'alors ie desirois vacquer seulement a la recherche de la verité, ie pensay qu'il faloit que ie fisse tout le contraire, & que ie reiettasse, comme absolument faux, tout ce en quoy ie pourrois imaginer le moindre doute, affin de voir s'il ne resteroit point, apres cela, quelque chose en ma creance, qui fust entierement indubitable. Ainsi, a [32] cause que nos sens nous trompent quelquefois, ie voulû supposer qu'il n'y auoit aucune chose qui fust telle qu'ils nous la font imaginer.	I had long since noticed that in matters of conduct it is sometimes necessary to follow opinions one knows to be very uncertain just as if they were beyond doubt, as was said above. But because I then wished to devote myself solely to the search for truth, I thought I had to do the very opposite, and reject as absolutely false everything in which I could imagine the least doubt, in order to see whether, after that, anything would remain among my beliefs that was entirely indubitable. Thus, [32] because our senses sometimes deceive us, I chose to suppose that nothing was such as they make us imagine it.
AT 32	Et pourcequ'il y a des hommes qui se méprenent en raisonnant, mesme touchant les plus simples matieres de Geometrie, & y font des Paralogismes, iugeant que i'estois suiet a faillir, autant qu'aucun autre, ie reiettay comme fausses toutes les raisons que i'auois prises auparauant pour Demonstrations. Et enfin, considerant que toutes les mesmes pensées, que nous auons estant esueillez, nous peuuent aussy venir, quand nous dormons, sans qu'il y en ait aucune, pour lors, qui soit vraye, ie me resolu de feindre que toutes les choses qui m'estoient iamais entrées en l'esprit, n'estoient non plus vrayes que les illusions de mes songes.	And because there are people who make mistakes in reasoning, even about the simplest matters of geometry, and commit fallacies, I judged that I was as liable to err as anyone else, and I rejected as false all the reasonings I had previously taken for demonstrations. And finally, considering that all the same thoughts we have when awake can also come to us when we are asleep, without any of them then being true, I resolved to pretend that everything that had ever entered my mind was no more true than the illusions of my dreams.
	Mais, aussitost aprés, ie pris garde que, pendant que ie voulois ainsi penser que tout estoit faux, il falloit	But immediately afterward I noticed that, while I was trying in this way to think that everything

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necessairement que moy, qui le pensois, fusse quelque chose. Et remarquant que cete verité : *ie pense, donc ie suis,* estoit si ferme & si assurée, que toutes les plus extrauagantes suppositions des Sceptiques n'estoient pas capables de l'esbransler, ie iugay que ie pouuois la receuoir, sans scrupule, pour le premier principe de la Philosophie, que ie cherchois.

Puis, examinant auec attention ce que i'estois, & voyant que ie pouuois feindre que ie n'auois aucun cors, & qu'il n'y auoit aucun monde, ny aucun lieu ou ie fusse ; mais que ie ne pouuois pas feindre, pour cela, que ie n'estois point ; & qu'au contraire, de cela mesme que ie pensois a douter de la verité des autres choses, il suiuoit tres euidenment & tres certainement que i'estois ; au lieu que, si i'eusse seulement [33] cessé de penser, encore que tout le reste de ce que i'auois iamais imaginé, eust esté vray, ie n'auois aucune raison de croire que i'eusse esté : ie connû de la que i'estois vne substance dont toute l'essence ou la nature n'est que de penser, & qui, pour estre, n'a besoin d'aucun lieu, ny ne depend d'aucune chose materielle.

AT 33 En sorte que ce Moy, c'est a dire, l'Ame par laquelle ie suis ce que ie suis, est entierement distincte du cors, & mesme qu'elle est plus aisée a connoistre que luy, & qu'encore qu'il ne fust point, elle ne lairroit pas d'estre tout ce qu'elle est.

Aprés cela, ie consideray en general ce qui est requis a vne proposition pour estre vraye & certaine ; car, puisque ie venois d'en trouuer vne que ie sçauois estre telle, ie pensay que ie deuois aussy sçauoir en quoy consiste cete certitude. Et ayant remarqué qu'il n'y a rien du tout en cecy : *ie pense, donc ie suis,* qui m'assure que ie dis la verité, sinon que ie voy tres clairement que, pour penser, il faut estre : ie iugay que ie pouuois prendre pour reigle generale, que les choses que nous conceuons fort clairement & fort distinctement, sont toutes vrayes ; mais qu'il y a seulement quelque difficulté a bien remarquer quelles sont celles que nous conceuons distinctement.

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was false, it necessarily had to be that I, who was thinking it, was something. And observing that this truth, *I think, therefore I am,* was so firm and so assured that all the most extravagant suppositions of the Skeptics were incapable of shaking it, I judged that I could accept it without scruple as the first principle of the philosophy I was seeking.[1]

Then, examining attentively what I was, and seeing that I could pretend that I had no body, and that there was no world and no place where I was, but that I could not for all that pretend that I did not exist; and that, on the contrary, from the very fact that I was thinking of doubting the truth of other things, it followed very evidently and very certainly that I existed; whereas if I had merely [33] stopped thinking, even if everything else I had ever imagined had been true, I would have had no reason to believe that I existed—I knew from this that I was a substance whose whole essence or nature is simply to think, and which, in order to exist, needs no place and depends on no material thing.

So that this 'I'—that is, the soul by which I am what I am—is entirely distinct from the body, and is even easier to know than the body, and even if the body did not exist, the soul would not cease to be all that it is.

After that, I considered in general what is required for a proposition to be true and certain; for since I had just found one that I knew to be so, I thought I ought also to know what this certainty consists in. And having noticed that there is nothing at all in *I think, therefore I am* that assures me I am telling the truth, except that I see very clearly that in order to think one must exist, I judged that I could take it as a general rule that the things we conceive very clearly and very distinctly are all true; but that there is some difficulty only in properly discerning which are the ones we conceive distinctly.

1 The famous Latin form, *cogito, ergo sum*, comes later, in the *Principles of Philosophy* and the Latin translation of the *Discourse* (both 1644).

THE IDEA OF A PERFECT BEING

Descartes argues that his idea of something more perfect than himself must come from God.

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En suite de quoy, faisant reflexion sur ce que ie doutois, & que, par consequent, mon estre n'estoit pas tout parfait, car ie voyois clairement que c'estoit vne plus grande perfection de connoistre que de douter, ie m'auisay de chercher d'où i'auois appris a penser a quelque chose de plus parfait que ie n'estois ; & ie connu euidenment que ce deuoit estre [34] de quelque nature qui fust en effect plus parfaite.

AT 34

Pour ce qui est des pensées que i'auois de plusieurs autres choses hors de moy, comme du ciel, de la terre, de la lumiere, de la chaleur, & de milles autres, ie n'estois point tant en peine de sçauoir d'où elles venoient, a cause que, ne remarquant rien en elles qui me semblast les rendre superieures a moy, ie pouuois croyre que, si elles estoient vrayes, c'estoient des dependances de ma nature, en tant qu'elle auoit quelque perfection ; & si elles ne l'estoient pas, que ie les tenois du neant, c'est a dire, qu'elles estoient en moy, pourceque i'auois du defaut.

Mais ce ne pouuoit estre le mesme de l'idée d'vn estre plus parfait que le mien : car, de la tenir du neant, c'estoit chose manifestement impossible ; et pourcequ'il n'y a pas moins de repugnance que le plus parfait soit vne suite & vne dependance du moins parfait, qu'il y en a que de rien procede quelque chose, ie ne la pouuois tenir non plus de moy mesme. De façon qu'il restoit qu'elle eust esté mise en moy par vne nature qui fust veritablement plus parfaite que ie n'estois, & mesme qui eust en soy toutes les perfections dont ie pouuois auoir quelque idée, c'est a dire, pour m'expliquer en vn mot, qui fust Dieu.

A quoy i'adioustay que, puisque ie connoissois quelques perfections que ie n'auois point, ie n'estois pas le seul estre qui existast (i'vseray, s'il vous plaist, icy librement des mots de l'Eschole), mais qu'il falloit, de necessité, qu'il y en eust quelque autre plus parfait, duquel ie dependisse, & duquel i'eusse acquis tout ce que i'auois. Car, si i'eusse esté seul & independant de tout autre, en sorte que i'eusse eu, [35] de moy mesme, tout ce peu que ie participois de l'estre parfait, i'eusse pû auoir de moy, par mesme raison, tout le surplus que ie connoissois me manquer, & ainsi estre moy mesme infini, eternel, immuable, tout connoissant, tout puissant, & enfin auoir toutes les perfections que ie pouuois remarquer estre en Dieu.

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Next, reflecting on the fact that I was doubting, and that consequently my being was not wholly perfect—for I saw clearly that it was a greater perfection to know than to doubt—I decided to look into where I had learned to think of something more perfect than I was; and I knew evidently that it must be [34] from some nature that was in fact more perfect.

As for the thoughts I had of many other things outside me, such as the sky, the earth, light, heat and a thousand others, I was not so troubled to know where they came from, because, noticing nothing in them that seemed to make them superior to me, I could believe that, if they were true, they depended on my nature insofar as it had some perfection; and if they were not, that I had them from nothing—that is, that they were in me because I had some defect.

But the same could not be true of the idea of a being more perfect than my own. For to have it from nothing was manifestly impossible; and since it is no less contradictory that the more perfect should follow from and depend on the less perfect than that something should come from nothing, I could not have it from myself either. So it remained that it had been put into me by a nature that was truly more perfect than I was, and that even had in itself all the perfections of which I could have any idea—that is, to explain myself in a word, that was God.

To this I added that, since I knew some perfections that I did not have, I was not the only being that existed (I will here, if you please, freely use the terms of the Schools), but that there must of necessity be some other, more perfect being, on which I depended and from which I had acquired all that I had. For if I had been alone and independent of everything else, so that I had had, [35] from myself, all the little I participated in the perfect being, I could for the same reason have had from myself all the rest that I knew I lacked, and thus been myself infinite, eternal, unchanging, all-knowing, all-powerful, and in short have had all the perfections I could observe to be in God.[2]

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AT 35 Car, suiuant les raisonnemens que ie viens de faire, pour connoistre la nature de Dieu, autant que la miene en estoit capable, ie n'auois qu'a considerer de toutes les choses dont ie trouuois en moy quelque idée, si c'estoit perfection, ou non, de les posseder, & i'estois assuré qu'aucune de celles qui marquoient quelque imperfection, n'estoit en luy, mais que toutes les autres y estoient. Comme ie voyois que le doute, l'inconstance, la tristesse, & choses semblables, n'y pouuoient estre, vû que i'eusse esté moy mesme bien ayse d'en estre exempt.

Puis, outre cela, i'auois des idées de plusieurs choses sensibles & corporelles : car, quoy que ie supposasse que ie resuois, & que tout ce que ie voyois ou imaginois estoit faux, ie ne pouuois nier toutefois que les idées n'en fussent veritablement en ma pensée ; mais pourceque i'auois desia connu en moy tres clairement que la nature intelligente est distincte de la corporelle, considerant que toute composition tesmoigne de la dependance, & que la dependance est manifestement vn defaut, ie iugeois de la, que ce ne pouuoit estre vne perfection en Dieu d'estre composé de ces deux natures, & que, par consequent, il ne l'estoit pas ; mais que, s'il y auoit quelques cors dans le monde, ou bien quelques intelligences, ou autres natures, qui ne fussent point toutes [36] parfaites, leur estre deuoit dependre de sa puissance, en telle sorte qu'elles ne pouuoient subsister sans luy vn seul moment.

AT 36 Ie voulu chercher, aprés cela, d'autres veritez, & m'estant proposé l'obiet des Geometres, que ie conceuois comme vn cors continu, ou vn espace indefiniment estendu en longueur, largeur, & hauteur ou profondeur, diuisible en diuerses parties, qui pouuoient auoir diuerses figures & grandeurs, & estre meuës ou transposées en toutes sortes, car les Geometres supposent tout cela en leur obiet, ie parcouru quelques vnes de leurs plus simples demonstrations. Et ayant pris garde que cete grande certitude, que tout le monde leur attribuë, n'est fondée que sur ce qu'on les conçoit euidenment, suiuant la reigle que i'ay tantost dite, ie pris garde aussy qu'il n'y auoit rien du tout en elles qui m'assurast de l'existence de leur obiet.

Car, par exemple, ie voyois bien que, supposant vn triangle, il falloit que ses trois angles fussent esgaux a deux droits ; mais ie ne voyois rien pour cela qui

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For, following the reasoning I have just gone through, in order to know the nature of God as far as mine was capable of it, I had only to consider, for each of the things of which I found some idea in myself, whether or not it was a perfection to possess it; and I was sure that none of those that indicated some imperfection was in him, but that all the others were. Thus I saw that doubt, inconstancy, sadness and the like could not be in him, seeing that I myself would have been very glad to be free of them.

Then, besides that, I had ideas of many sensible and corporeal things. For even though I was supposing that I was dreaming, and that everything I saw or imagined was false, I still could not deny that the ideas of them were truly in my thought. But because I had already recognized very clearly in myself that intelligent nature is distinct from corporeal nature, considering that all composition is evidence of dependence, and that dependence is manifestly a defect, I judged from this that it could not be a perfection in God to be composed of these two natures, and that consequently he was not so composed; but that if there were any bodies in the world, or any intelligences or other natures that were not wholly [36] perfect, their being must depend on his power in such a way that they could not subsist without him for a single moment.

After that I wanted to look for other truths. Taking as my subject the object of the geometers—which I conceived as a continuous body, or a space indefinitely extended in length, width, and height or depth, divisible into various parts, which could have various shapes and sizes and be moved or transposed in all sorts of ways, for the geometers assume all this in their object—I went through some of their simplest demonstrations. And having noticed that the great certainty everyone attributes to them is founded only on the fact that they are conceived evidently, following the rule I stated a little earlier, I noticed also that there was nothing at all in them that assured me of the existence of their object.

For example, I saw clearly that, supposing a triangle, its three angles had to be equal to two right

2 The Schools: the scholastic philosophy taught in the universities, whose technical terms ("participate", "depend") Descartes borrows here.

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m'assurast qu'il y eust au monde aucun triangle. Au lieu que, reuenant a examiner l'idée que i'auois d'vn Estre parfait, ie trouuois que l'existence y estoit comprise, en mesme façon qu'il est compris en celle d'vn triangle que ses trois angles sont esgaux a deux droits, ou en celle d'vne sphere que toutes ses parties sont esgalement distantes de son centre, ou mesme encore plus euidenment ; et que, par consequent, il est pour le moins aussy certain, que Dieu, qui est cet Estre parfait, est ou existe, qu'aucune demonstration de Geometrie le sçauroit estre.

AT 37 Mais ce qui fait qu'il y en a plusieurs qui se persuadent qu'il y a de la difficulté a le connoistre, & mesme aussy a connoistre ce que c'est que leur ame, c'est qu'ils n'esleuent iamais leur esprit au dela des choses sensibles, & qu'ils sont tellement accoustumez a ne rien considerer qu'en l'imaginant, qui est vne façon de penser particuliere pour les choses materielles, que tout ce qui n'est pas imaginable, leur semble n'estre pas intelligible. Ce qui est assez manifeste de ce que mesme les Philosophes tienent pour maxime, dans les Escholes, qu'il n'y a rien dans l'entendement qui n'ait premierement esté dans le sens, où toutefois il est certain que les idées de Dieu & de l'ame n'ont iamais esté.

Et il me semble que ceux qui veulent vser de leur imagination, pour les comprendre, font tout de mesme que si, pour ouïr les sons, ou sentir les odeurs, ils se vouloient seruir de leurs yeux : sinon qu'il y a encore cete difference, que le sens de la veuë ne nous assure pas moins de la verité de ses obiets, que font ceux de l'odorat ou de l'ouye ; au lieu que ny nostre imagination ny nos sens ne nous sçauroient iamais assurer d'aucune chose, si nostre entendement n'y interuient.

Enfin, s'il y a encore des hommes qui ne soient pas assez persuadez de l'existence de Dieu & de leur ame, par les raisons que i'ay apportées, ie veux bien qu'ils sçachent que toutes les autres choses, dont ils se pensent peut estre plus assurez, comme d'auoir vn cors, & qu'il y a des astres & vne terre, & choses semblables, sont moins certaines.

Car, encore qu'on ait vne assurance morale de ces choses, qui est telle, qu'il semble [38] qu'a moins que d'estre extrauagant, on n'en peut douter, toutefois aussy, a moins que d'estre déraisonnable, lorsqu'il est question d'vne certitude metaphysique, on ne peut nier que ce ne soit assés de suiet, pour n'en estre pas entierement assuré,

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angles; but I saw nothing in this that assured me there was any triangle in the world. Whereas, going back to examine the idea I had of a perfect Being, I found that existence was included in it in the same way that it is included in the idea of a triangle that its three angles are equal to two right angles, or in that of a sphere that all its parts are equally distant from its center, or even more evidently; and that consequently it is at least as certain that God, who is this perfect Being, is or exists, as any geometrical demonstration could be.

But what makes many people persuade themselves that it is difficult to know him, and even to know what their own soul is, is that they never raise their minds beyond sensible things, and are so accustomed to considering nothing except by imagining it—which is a way of thinking peculiar to material things—that whatever is not imaginable seems to them unintelligible. This is clear enough from the fact that even the philosophers in the Schools hold as a maxim that there is nothing in the intellect that was not first in the senses, where, however, it is certain that the ideas of God and of the soul have never been.[3]

And it seems to me that those who want to use their imagination to understand these ideas are doing just as if they wanted to use their eyes to hear sounds or smell odors—except that there is this further difference: the sense of sight assures us of the truth of its objects no less than the senses of smell or hearing do, whereas neither our imagination nor our senses could ever assure us of anything unless our intellect intervenes.

Finally, if there are still people who are not sufficiently persuaded of the existence of God and of their soul by the reasons I have given, I want them to know that all the other things of which they perhaps think themselves more sure—such as having a body, and that there are stars and an earth, and the like—are less certain.

For although we have a practical assurance of these things, which is such that it seems [38] that, unless we are being absurd, we cannot doubt them, nevertheless, unless we are being unreasonable, when it is a question of metaphysical certainty we cannot deny that there is sufficient reas-

3 The scholastic axiom "Nothing is in the intellect that was not first in the senses," derived from Aristotle.

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que d'auoir pris garde qu'on peut, en mesme façon, s'imaginer, estant endormi, qu'on a vn autre cors, & qu'on voit d'autres astres, & vne autre terre, sans qu'il en soit rien. Car d'où sçait on que les pensées qui vienent en songe sont plutost fausses que les autres, vû que souuent elles ne sont pas moins viues & expresses ?

AT 38 Et que les meilleurs esprits y estudient, tant qu'il leur plaira, ie ne croy pas qu'ils puissent donner aucune raison qui soit suffisante pour oster ce doute, s'ils ne presupposent l'existence de Dieu. Car, premierement, cela mesme que i'ay tantost pris pour vne reigle, a sçauoir que les choses que nous conceuons tres clairement & tres distinctement, sont toutes vrayes, n'est assuré qu'a cause que Dieu est ou existe, & qu'il est vn estre parfait, & que tout ce qui est en nous vient de luy. D'où il suit que nos idées ou notions, estant des choses reelles, & qui vienent de Dieu, en tout ce en quoy elles sont claires & distinctes, ne peuuent en cela estre que vrayes.

En sorte que, si nous en auons assez souuent qui contienent de la fausseté, ce ne peut estre que de celles, qui ont quelque chose de confus & obscur, a cause qu'en cela elles participent du neant, c'est a dire, qu'elles ne sont en nous ainsi confuses, qu'a cause que nous ne sommes pas tous parfaits. Et il est euident qu'il n'y a pas moins de repugnance que la fausseté ou [39] l'imperfection procede de Dieu, en tant que telle, qu'il y en a, que la verité ou la perfection procede du neant.

AT 39 Mais si nous ne sçauions point que tout ce qui est en nous de reel & de vray, vient d'vn estre parfait & infini, pour claires & distinctes que fussent nos idées, nous n'aurions aucune raison qui nous assurast, qu'elles eussent la perfection d'estre vrayes.

Or, aprés que la connoissance de Dieu & de l'ame nous a ainsi rendus certains de cete regle, il est bien aysé a connoistre que les resueries que nous imaginons estant endormis, ne doiuent aucunement nous faire douter de la verité des pensées que nous auons estant esueillez. Car, s'il arriuoit, mesme en dormant, qu'on eust quelque idée fort distincte, comme, par exemple, qu'vn Geometre inuentast quelque nouuelle demonstration, son sommeil ne l'empescheroit pas d'estre vraye.

Et pour l'erreur la plus ordinaire de nos songes, qui consiste en ce qu'ils nous representent diuers obiets en

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on for not being entirely sure of them in having noticed that we can, in the same way, imagine while asleep that we have another body and see other stars and another earth, without any of it being so. For how do we know that the thoughts that come to us in dreams are false rather than the others, seeing that they are often no less vivid and sharp?[4]

And let the best minds study the matter as much as they like; I do not believe they can give any reason sufficient to remove this doubt unless they presuppose the existence of God. For, first, the very thing I took a little earlier as a rule—namely, that the things we conceive very clearly and very distinctly are all true—is assured only because God is or exists, and is a perfect being, and everything in us comes from him. From which it follows that our ideas or notions, being real things that come from God, cannot, insofar as they are clear and distinct, be anything but true.

So that if we quite often have some that contain falsity, these can only be ones that have something confused and obscure about them, because in this respect they partake of nothingness—that is, they are confused in us in this way only because we are not wholly perfect. And it is evident that it is no less contradictory that falsity or [39] imperfection, as such, should come from God, than that truth or perfection should come from nothingness.

But if we did not know that everything real and true in us comes from a perfect and infinite being, then however clear and distinct our ideas might be, we would have no reason to assure us that they had the perfection of being true.

Now, once the knowledge of God and of the soul has thus made us certain of this rule, it is quite easy to see that the dreams we imagine when asleep should in no way make us doubt the truth of the thoughts we have when awake. For if it happened, even in sleep, that someone had some very distinct idea—if, for example, a geometer discovered some new demonstration—his sleep would not prevent it from being true.

And as for the most common error of our dreams, which consists in their representing various ob-

4 "Practical assurance" renders *assurance morale* (traditionally "moral certainty"): certainty enough for the conduct of life, as opposed to metaphysical certainty, which excludes every possible doubt. Descartes's *moralement* is likewise rendered "practically."

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mesme façon que font nos sens exterieurs, n'importe pas qu'elle nous donne occasion de nous desfier de la verité de telles idées, a cause qu'elles peuuent aussy nous tromper assez souuent, sans que nous dormions : comme lorsque ceux qui ont la iaunisse voyent tout de couleur iaune, ou que les astres ou autres cors fort esloignez nous paroissent beaucoup plus petits qu'ils ne sont. Car enfin, soit que nous veillions, soit que nous dormions, nous ne nous deuons iamais laisser persuader qu'a l'euidence de nostre raison.

Et il est a remarquer que ie dis, de nostre raison, & non point, de nostre imagination ny de nos sens. Comme, encore que nous voyons le [40] soleil tres clairement, nous ne deuons pas iuger pour cela qu'il ne soit que de la grandeur que nous le voyons ; et nous pouuons bien imaginer distinctement vne teste de lion entée sur le cors d'vne cheure, sans qu'il faille conclure, pour cela, qu'il y ait au monde vne Chimere : car la raison ne nous dicte point que ce que nous voyons ou imaginons ainsi soit veritable.

AT 40 Mais elle nous dicte bien que toutes nos idées ou notions doiuent auoir quelque fondement de verité ; car il ne seroit pas possible que Dieu, qui est tout parfait & tout veritable les eust mises en nous sans cela. Et pourceque nos raisonnemens ne sont iamais si euidens ny si entiers pendant le sommeil que pendant la veille, bien que quelquefois nos imaginations soient alors autant ou plus viues & expresses, elle nous dicte aussy que nos pensées ne pouuant estre toutes vrayes, a cause que nous ne sommes pas tous-parfaits, ce qu'elles ont de verité doit infalliblement se rencontrer en celles que nous auons estant esueillez, plutost qu'en nos songes.

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jects to us in the same way as our external senses do, it does not matter that it gives us occasion to distrust the truth of such ideas, because the senses can also deceive us quite often without our being asleep: as when people who have jaundice see everything colored yellow, or when the stars or other very distant bodies appear to us much smaller than they are. For in the end, whether we are awake or asleep, we should never let ourselves be persuaded except by the evidence of our reason.

And it should be noted that I say "of our reason", and not "of our imagination" or "of our senses". For even though we see the [40] sun very clearly, we must not judge from this that it is only as large as we see it; and we can distinctly imagine a lion's head grafted onto a goat's body without having to conclude from this that there is a chimera in the world. For reason does not dictate to us that what we see or imagine in this way is real.

But it does dictate to us that all our ideas or notions must have some foundation of truth; for it would not be possible for God, who is wholly perfect and wholly truthful, to have put them in us without one. And since our reasonings are never as evident or as complete during sleep as while we are awake, although our imaginings are sometimes as vivid and sharp then, or more so, reason also tells us that, since our thoughts cannot all be true, because we are not wholly perfect, whatever truth they have must infallibly be found in those we have when awake rather than in our dreams.

Part Five

Questions of physics
The world, the motion of the heart, and the difference between human souls and animals.

FRENCH

Ie serois bien ayse de poursuiure, & de faire voir icy toute la chaisne des autres veritez que i'ay deduites de ces premieres. Mais, a cause que, pour cet effect, il seroit maintenant besoin que ie parlasse de plusieurs questions, qui sont en controuerse entre les doctes, auec lesquels ie ne desire point me brouiller, ie croy qu'il sera mieux que ie m'en abstiene, & que ie die seulement en general quelles elles sont, affin de laisser iuger aux plus sages, s'il seroit vtile que le public en fust plus particulierement informé.

Ie suis [41] tousiours demeuré ferme en la resolution que i'auois prise, de ne supposer aucun autre principe, que celuy dont ie vien de me seruir pour demonstrer l'existence de Dieu & de lame, & de ne receuoir aucune chose pour vraye, qui ne me semblast plus claire & plus certaine que n'auoient fait auparauant les demonstrations des Geometres.

AT 41 Et neantmoins, i'ose dire que, non seulement i'ay trouué moyen de me satisfaire en peu de tems, touchant toutes les principales difficultez dont on a coustume de traiter en la Philosophie, mais aussy, que i'ay remarqué certaines loix, que Dieu a tellement establies en la nature, & dont il a imprimé de telles notions en nos ames, qu'aprés y auoir fait assez de reflexion, nous ne sçaurions douter qu'elles ne soient exactement obseruées, en tout ce qui est ou qui se fait dans le monde. Puis en considerant la suite de ces loix, il me semble auoir descouuert plusieurs veritez plus vtiles & plus importantes, que tout ce que i'auois appris auparauant, ou mesme esperé d'apprendre.

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I would be very glad to continue, and to show here the whole chain of other truths I have deduced from these first ones. But because, to do so, I would now need to speak of many questions that are in dispute among the learned, with whom I have no wish to quarrel, I think it will be better for me to refrain, and to say only in general what they are, so as to leave it to the wisest to judge whether it would be useful for the public to be informed of them in more detail.

I have [41] always remained firm in the resolution I had taken to assume no principle other than the one I have just used to demonstrate the existence of God and of the soul, and to accept nothing as true that did not seem to me clearer and more certain than the demonstrations of the geometers had seemed before.

And nevertheless I venture to say that not only have I found a way to satisfy myself in a short time on all the principal difficulties usually treated in philosophy, but also that I have noticed certain laws which God has so established in nature, and of which he has imprinted such notions in our souls, that after reflecting on them sufficiently we could not doubt that they are exactly observed in everything that exists or happens in the world. Then, by considering the sequence of consequences of these laws, I seem to have discovered many truths more useful and more important than anything I had learned before, or even hoped to learn.

THE TREATISE ON THE WORLD

Descartes summarizes his unpublished treatise on light, matter, the heavens and the earth.

FRENCH

Mais pourceque i'ay tasché d'en expliquer les principales dans vn Traité, que quelques considerations m'empeschent de publier, ie ne les sçaurois mieux faire

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But because I have tried to explain the chief among them in a treatise which certain considerations prevent me from publishing, I could not

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connoistre, qu'en disant icy sommairement ce qu'il contient. I'ay eu dessein d'y comprendre tout ce que ie pensois sçauoir, auant que de l'escrire, touchant la Nature des choses Materielles.

Mais, tout de mesme que les peintres, ne pouuant esgalement bien representer dans vn tableau plat toutes les diuerses faces d'vn cors solide, en choisissent vne des principales qu'ils mettent seule vers le iour, & ombrageant les [42] autres, ne les font paroistre, qu'en tant qu'on les peut voir en la regardant : ainsi, craignant de ne pouuoir mettre en mon discours tout ce que i'auois en la pensée, i'entrepris seulement d'y exposer bien amplement ce que ie conceuois de la Lumiere ; puis, a son occasion, d'y adiouster quelque chose du Soleil & des Estoiles fixes, a cause qu'elle en procede presque toute ; des Cieux, a cause qu'ils la transmettent ; des Planetes, des Cometes, & de la Terre, a cause qu'elles la font refleschir ; & en particulier de tous les Cors qui sont sur la terre, a cause qu'ils sont ou colorez, ou transparens, ou lumineux ; & enfin de l'Homme, a cause qu'il en est le spectateur.

AT 42 Mesme, pour ombrager vn peu toutes ces choses, & pouuoir dire plus librement ce que i'en iugeois, sans estre obligé de suiure ny de refuter les opinions qui sont receuës entre les doctes, ie me resolu de laisser tout ce Monde icy a leurs disputes, & de parler seulement de ce qui arriueroit dans vn nouueau, si Dieu creoit maintenant quelque part, dans les Espaces Imaginaires, assez de matiere pour le composer, & qu'il agitast diuersement & sans ordre les diuerses parties de cete matiere, en sorte qu'il en composast vn Chaos aussy confus que les Poetes en puissent feindre, & que, par apres, il ne fist autre chose que prester son concours ordinaire a la Nature, & la laisser agir suiuant les Loix qu'il a establies.

Ainsi, premierement, ie descriuis cete Matiere, & taschay de la representer telle qu'il n'y a rien au monde, ce me semble, de plus clair ny plus intelligible, excepté ce qui a tantost esté dit de Dieu & de lame : car mesme ie supposay, expressement, qu'il [43] n'y auoit en elle aucune de ces Formes ou Qualitez dont on dispute dans les Escholes, ny generalement aucune chose, dont la connoissance ne fust si naturelle a nos ames, qu'on ne pust pas mesme feindre de l'ignorer.

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make them known better than by saying here, in summary, what it contains. I intended to include in it everything I thought I knew, before writing it, about the nature of material things.[1]

But just as painters, unable to represent equally well on a flat canvas all the different faces of a solid body, choose one of the principal ones to set alone toward the light, and, shading the [42] others, make them appear only as they can be seen when one looks at that one: so, fearing I could not put into my discourse everything I had in mind, I undertook only to set out very fully what I conceived about light; then, on that occasion, to add something about the sun and the fixed stars, because almost all light comes from them; about the heavens, because they transmit it; about the planets, the comets and the Earth, because they reflect it; and in particular about all the bodies on the earth, because they are either colored, or transparent, or luminous; and finally about man, because he is its spectator.

Moreover, to shade all these things a little, and to be able to say more freely what I thought about them without being obliged to follow or refute the opinions accepted among the learned, I resolved to leave this whole world here to their disputes, and to speak only of what would happen in a new one, if God were now to create, somewhere in the imaginary spaces, enough matter to compose it, and were to agitate the various parts of this matter in various ways and without order, so as to make of it a chaos as confused as the poets could invent; and if afterward he did nothing but lend his ordinary concurrence to nature, and let it act according to the laws he has established.[2]

So, first, I described this matter, and tried to represent it in such a way that there is nothing in the world, it seems to me, clearer or more intelligible, except what was said a little earlier about God and the soul. For I even expressly supposed that [43] there were in it none of those forms or qualities that are disputed in the Schools, nor in general anything the knowledge of which was not so nat-

1 The treatise is *The World* (*Le Monde*), which Descartes withheld in 1633 on learning of Galileo's condemnation; it appeared only after his death, in 1664.
2 "Imaginary spaces" was the scholastics' term for the space pictured beyond the created universe. God's "concurrence" (*concours*) is the theologians' term for his ongoing cooperation, without which no created thing could act.

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ural to our souls that one could not even pretend to be ignorant of it.[3]

AT 43 De plus, ie fis voir quelles estoient les Loix de la Nature ; et sans appuier mes raisons sur aucun autre principe, que sur les perfections infinies de Dieu, ie taschay a demonstrer toutes celles dont on eust pu auoir quelque doute, & a faire voir qu'elles sont telles, qu'encore que Dieu auroit creé plusieurs mondes, il n'y en sçauroit auoir aucun, où elles manquassent d'estre obseruées.

Further, I showed what the laws of nature were; and without resting my reasons on any principle other than the infinite perfections of God, I tried to demonstrate all those about which there could have been any doubt, and to show that they are such that, even if God had created many worlds, there could be none in which they failed to be observed.

Apres cela, ie monstray comment la plus grande part de la matiere de ce Chaos deuoit, en suite de ces loix, se disposer & s'arrenger d'vne certaine façon qui la rendoit semblable a nos Cieux ; comment, cependant, quelques vnes de ses parties deuoient composer vne Terre, & quelques vnes des Planetes & des Cometes, & quelques autres vn Soleil & des Estoiles fixes. Et icy, m'estendant sur le suiet de la lumiere, i'expliquay bien au long quelle estoit celle qui se deuoit trouuer dans le Soleil & les Estoiles, & comment de la elle trauersoit en vn instant les immenses espaces des cieux, & comment elle se refleschissoit des Planetes & des Cometes vers la Terre.

After that, I showed how the greater part of the matter of this chaos must, in consequence of these laws, dispose and arrange itself in a certain way that made it like our heavens; how, meanwhile, some of its parts must compose an earth, some planets and comets, and some others a sun and fixed stars. And here, enlarging on the subject of light, I explained at great length what the light was that must be found in the sun and the stars, how from there it crossed the immense spaces of the heavens in an instant, and how it was reflected from the planets and comets toward the earth.

I'y adioustay aussy plusieurs choses, touchant la substance, la situation, les mouuemens & toutes les diuerses qualitez de ces Cieux & de ces Astres ; en sorte que ie pensois en dire assez, pour faire connoistre qu'il ne se remarque rien en ceux de ce monde, qui ne deust, ou du moins qui ne pûst, paroistre tout semblable en ceux du monde [44] que ie descriuois.

I also added many things about the substance, the position, the motions and all the various qualities of these heavens and these heavenly bodies; so that I thought I had said enough to show that nothing is observed in those of this world that should not, or at least could not, appear exactly the same in those of the world [44] I was describing.

AT 44 De là ie vins a parler particulierement de la Terre : comment, encore que i'eusse expressement supposé que Dieu n'auoit mis aucune pesanteur en la matiere dont elle estoit composée, toutes ses parties ne laissoient pas de tendre exactement vers son centre ; comment, y ayant de l'eau & de l'air sur sa superficie, la disposition des cieux & des astres, principalement de la Lune, y deuoit causer vn flus & reflus, qui fust semblable, en toutes ses circonstances, a celuy qui se remarque dans nos mers ; & outre cela vn certain cours, tant de l'eau que de l'air, du leuant vers le couchant, tel qu'on le remarque aussy entre les Tropiques ; comment les montaignes, les mers, les fontaines & les riuieres pouuoient naturellement s'y former, & les metaux y venir dans les mines, & les plantes y croistre dans les campaignes, & generalement tous les cors qu'on nomme meslez ou composez s'y engendrer.

From there I went on to speak in particular of the earth: how, even though I had expressly supposed that God had put no heaviness in the matter of which it was composed, all its parts nevertheless tended exactly toward its center; how, since there was water and air on its surface, the arrangement of the heavens and the heavenly bodies, chiefly the moon, must cause an ebb and flow there, similar in all its circumstances to that observed in our seas, and in addition a certain current, both of water and of air, from east to west, like the one also observed between the tropics; how mountains, seas, springs and rivers could form there naturally, metals come into the mines, plants grow in the fields, and in general all the bodies called mixed or composite be generated there.

Et entre autres choses, a cause qu'aprés les astres ie ne connois rien au monde que le feu qui produise de la

And among other things, since after the heavenly bodies I know of nothing in the world except fire

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lumiere, ie m'estudiay a faire entendre bien clairement tout ce qui appartient a sa nature, comment il se fait, comment il se nourrit ; comment il n'a quelquefois que de la chaleur sans lumiere, & quelquefois que de la lumiere sans chaleur ; comment il peut introduire diuerses couleurs en diuers cors, & diuerses autres qualitez ; comment il en fond quelques vns, & en durcit d'autres ; comment il les peut consumer presque tous, ou conuertir en cendres & en fumée ; et enfin, comment de ces cendres, par la seule violence de son action, il forme du verre : car cete transmutation de [45] cendres en verre me semblant estre aussy admirable qu'aucune autre qui se face en la nature, ie pris particulierement plaisir a la descrire.

AT 45

Toutefois ie ne voulois pas inferer de toutes ces choses, que ce monde ait esté creé en la façon que ie proposois ; car il est bien plus vraysemblable que, dés le commencement, Dieu l'a rendu tel qu'il deuoit estre.

Mais il est certain, & c'est vne opinion communement receuë entre les Theologiens, que l'action, par laquelle maintenant il le conserue, est toute la mesme que celle par laquelle il l'a creé ; de façon qu'encore qu'il ne lui auroit point donné, au commencement, d'autre forme que celle du Chaos, pouruû qu'ayant establi les Loix de la Nature, il luy prestast son concours, pour agir ainsi qu'elle a de coustume, on peut croyre, sans faire tort au miracle de la creation, que par cela seul toutes les choses qui sont purement materielles auroient pû, auec le tems, s'y rendre telles que nous les voyons a present.

Et leur nature est bien plus aysée a conceuoir, lorsqu'on les voit naistre peu a peu en cete sorte, que lorsqu'on ne les considere que toutes faites.

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that produces light, I set myself to explain very clearly everything that belongs to its nature: how it is made, how it is fed; how it sometimes has only heat without light, and sometimes only light without heat; how it can introduce various colors into various bodies, and various other qualities; how it melts some and hardens others; how it can consume almost all of them, or turn them into ashes and smoke; and finally, how from these ashes, by the sheer violence of its action, it forms glass. For since this transmutation of [45] ashes into glass seemed to me as wonderful as any other that occurs in nature, I took particular pleasure in describing it.

Still, I did not want to infer from all these things that this world was created in the way I was proposing; for it is far more likely that God made it, from the very beginning, just as it had to be.

But it is certain, and it is an opinion commonly accepted among theologians, that the action by which he now preserves it is exactly the same as the action by which he created it. So even if, at the beginning, he had given it no other form than that of chaos, provided that, having established the laws of nature, he lent it his concurrence so that it could act as it usually does, we may believe, without detracting from the miracle of creation, that by this alone all purely material things could, in time, have become just as we see them now.

And their nature is much easier to conceive when we see them come into being little by little in this way than when we consider them only as already complete.

THE BODY AS A MACHINE

Descartes imagines a human body made by God from matter alone and works out its functions.

FRENCH

De la description des cors inanimez & des plantes, ie passay a celle des animaux & particulierement a celle des hommes. Mais, pourceque ie n'en auois pas encore assez de connoissance, pour en parler du mesme style que du reste, c'est a dire, en demonstrant les effets par les causes, & faisant voir de quelles semences, & en quelle façon, la Nature les doit produire, ie me contentay de supposer que Dieu formast le cors d'vn homme,

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From the description of inanimate bodies and plants, I went on to that of animals, and in particular to that of human beings. But since I did not yet know enough about them to speak of them in the same style as the rest—that is, by demonstrating effects from their causes, and showing from what seeds and in what way nature must produce them —I contented myself with supposing that God

3 The "substantial forms" and "real qualities" of scholastic natural philosophy.

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entierement semblable a [46] l'vn des nostres, tant en la figure exterieure de ses membres qu'en la conformation interieure de ses organes,

AT 46 sans le composer d'autre matiere que de celle que i'auois descrite, & sans mettre en luy, au commencement, aucune ame raisonnable, ny aucune autre chose pour y seruir d'ame vegetante ou sensitiue, sinon qu'il excitast en son cœur vn de ces feux sans lumiere, que i'auois desia expliquez, & que ie ne conceuois point d'autre nature que celuy qui échaufe le foin, lorsqu'on l'a renfermé auant qu'il fust sec, ou qui fait bouillir les vins nouueaux, lorsqu'on les laisse cuuer sur la rape.

Car examinant les fonctions, qui pouuoient en suite de cela estre en ce cors, i'y trouuois exactement toutes celles qui peuuent estre en nous sans que nous y pensions, ny par consequent que nostre ame, c'est a dire, cete partie distincte du cors dont il a esté dit cy dessus que la nature n'est que de penser, y contribuë, & qui sont toutes les mesmes en quoy on peut dire que les animaux sans raison nous resemblent : sans que i'y en pûsse pour cela trouuer aucune, de celles qui, estant dependantes de la pensée, sont les seules qui nous apartienent en tant qu'hommes, au lieu que ie les y trouuois toutes par aprés, ayant supposé que Dieu creast vne ame raisonnable, & qu'il la ioignist a ce cors en certaine façon que ie descriuois.

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formed the body of a man exactly like [46] one of ours, both in the outward shape of its limbs and in the internal structure of its organs,

without making it of any matter other than the matter I had described, and without putting into it, at the beginning, any rational soul, or anything else to serve as a vegetative or sensitive soul. He merely kindled in its heart one of those fires without light which I had already explained, and which I conceived to be of no other nature than the fire that heats hay when it has been stored before it was dry, or that makes new wine ferment when it is left to steep on the crushed grapes.[4]

For when I examined the functions that could, as a result, be present in this body, I found in it exactly all those that can be in us without our thinking about them, and therefore without any contribution from our soul—that is, from that part distinct from the body whose nature, as was said above, is simply to think. These are all the same functions in which we can say that animals without reason resemble us. Yet I could not find in it any of those functions which, depending on thought, are the only ones that belong to us as human beings; whereas I did find them all afterward, once I had supposed that God created a rational soul and joined it to this body in a certain way that I described.

THE MOVEMENT OF THE HEART

Descartes describes the heart's chambers and valves and explains its movement by heat expanding the blood.

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Mais, affin qu'on puisse voir en quelle sorte i'y traitois cete matiere, ie veux mettre icy l'explication du Mouuement du Cœur & des Arteres, qui estant le premier & le plus general qu'on obserue dans les animaux, on iugera facilement de luy ce qu'on doit [47] penser de tous les autres. Et affin qu'on ait moins de difficulté a entendre ce que i'en diray, ie voudrois que ceux qui ne sont point versez en l'Anatomie prissent la peine, auant que de lire cecy, de faire couper deuant eux le cœur de quelque grand animal qui ait des poumons, car il est en tous assez semblable a celuy de l'homme, & qu'ils se fissent montrer les deux chambres ou concauitez qui y sont.

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But so that you can see how I treated this subject there, I want to set down here my explanation of the movement of the heart and arteries. Since it is the first and most general movement observed in animals, it will make it easy to judge what we should [47] think of all the others. And so that there will be less difficulty in understanding what I am going to say about it, I would like those who are not versed in anatomy to take the trouble, before reading this, to have the heart of some large animal with lungs cut open in front of them—for in all such animals it is quite similar to the human heart

4 The "vegetative" and "sensitive" souls are the scholastic (Aristotelian) principles of nutrition and growth, and of sensation and movement.

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AT 47 Premierement, celle qui est dans son costé droit, a laquelle respondent deux tuyaux fort larges : a sçauoir la vene caue, qui est le principal receptacle du sang, & comme le tronc de l'arbre dont toutes les autres venes du cors sont les branches, & la vene arterieuse, qui a esté ainsi mal nommée, pourceque c'est en effect vne artere, laquelle prenant son origine du cœur, se diuise, aprés en estre sortie, en plusieurs branches qui se vont respandre partout dans les poumons.

Puis, celle qui est dans son costé gauche, a laquelle respondent en mesme façon deux tuyaux, qui sont autant ou plus larges que les precedens : a sçauoir l'artere veneuse, qui a esté aussy mal nommée, a cause qu'elle n'est autre chose qu'vne vene, laquelle vient des poumons, ou elle est diuisée en plusieurs branches, entrelacées auec celles de la vene arterieuse, & celles de ce conduit qu'on nomme le sifflet, par où entre l'air de la respiration ; & la grande artere, qui, sortant du cœur, enuoye ses branches par tout le cors.

Ie voudrois aussy qu'on leur montrast soigneusement les onze petites peaux, qui, comme autant de petites portes, ouurent & ferment les quatre ouuertures qui sont en ces deux concauitez : a [48] sçauoir, trois a l'entrée de la vene caue, où elles sont tellement disposées, qu'elles ne peuuent aucunement empescher que le sang qu'elle contient ne coule dans la concauité droite du cœur, & toutefois empeschent exactement qu'il n'en puisse sortir ; trois a l'entrée de la vene arterieuse, qui, estant disposées tout au contraire, permetent bien au sang, qui est dans cete concauité, de passer dans les poumons, mais non pas a celuy qui est dans les poumons d'y retourner ; & ainsi deux autres a l'entrée de l'artere veneuse, qui laissent couler le sang des poumons vers la concauité gauche du cœur, mais s'opposent a son retour ; & trois a l'entrée de la grande artere, qui luy permetent de sortir du cœur, mais l'empeschent d'y retourner.

AT 48 Et il n'est point besoin de chercher d'autre raison du nombre de ces peaux, sinon que l'ouuerture de l'artere veneuse, estant en ouale a cause du lieu ou elle se rencontre, peut estre commodement fermée auec deux, au lieu que les autres, estant rondes, le peuuent mieux estre auec trois.

De plus, ie voudrois qu'on leur fist considerer que la grande artere & la vene arterieuse sont d'vne

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—and to have the two chambers or cavities in it pointed out to them.

First, the one on its right side, to which two very wide tubes correspond: namely, the vena cava, which is the main receptacle of the blood, and like the trunk of a tree of which all the other veins of the body are the branches; and the arterial vein, which has been badly named, since it is in fact an artery, which originates in the heart and, after leaving it, divides into many branches that spread throughout the lungs.[5]

Then the one on its left side, to which there likewise correspond two tubes, as wide as the previous ones or wider: namely, the venous artery, which has also been badly named, because it is nothing but a vein. It comes from the lungs, where it is divided into many branches, interlaced with those of the arterial vein and with those of the passage called the windpipe, through which the air we breathe enters. And the great artery, which leaves the heart and sends its branches throughout the body.[6]

I would also like them to be shown carefully the eleven little membranes which, like so many little doors, open and close the four openings in these two cavities. [48] Namely: three at the entrance of the vena cava, arranged so that they cannot in any way prevent the blood it contains from flowing into the right cavity of the heart, and yet exactly prevent it from flowing back out; three at the entrance of the arterial vein, which, being arranged the opposite way, readily allow the blood in that cavity to pass into the lungs, but not the blood in the lungs to return to it; likewise two others at the entrance of the venous artery, which let the blood flow from the lungs toward the left cavity of the heart but block its return; and three at the entrance of the great artery, which allow the blood to leave the heart but prevent it from returning.

And there is no need to look for any other reason for the number of these membranes than this: the opening of the venous artery, being oval because of where it is located, can conveniently be closed with two, whereas the others, being round, can be better closed with three.

Further, I would like them to be made to notice that the great artery and the arterial vein are of a

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composition beaucoup plus dure & plus ferme, que ne sont l'artere veneuse & la vene caue ; & que ces deux derniers s'eslargissent auant que d'entrer dans le cœur, & y font comme deux bourses, nommées les oreilles du cœur, qui sont composées d'vne chair semblable à la siene ; et qu'il y a tousiours plus de chaleur dans le cœur, qu'en aucun autre endroit du cors ; et enfin, que cete chaleur est capable de faire que, s'il entre quelque goutte de sang en ses concauitez, elle s'enfle promtement & se [49] dilate, ainsi que font generalement toutes les liqueurs, lorsqu'on les laisse tomber goutte a goutte en quelque vaisseau qui est fort chaud.

AT 49 Car, aprés cela, ie n'ay besoin de dire autre chose, pour expliquer le mouuement du cœur, sinon que, lorsque ses concauitez ne sont pas pleines de sang, il y en coule necessairement de la vene caue dans la droite, & de l'artere veneuse dans la gauche ; d'autant que ces deux vaisseaux en sont tousiours pleins, & que leurs ouuertures, qui regardent vers le cœur, ne peuuent alors estre bouchées ; mais que, sitost qu'il est entré ainsi deux gouttes de sang, vne en chacune de ses concauitez, ces gouttes, qui ne peuuent estre que fort grosses, a cause que les ouuertures par où elles entrent sont fort larges, & les vaisseaux d'où elles vienent fort pleins de sang, se rarefient & se dilatent, a cause de la chaleur qu'elles y trouuent, au moyen de quoy, faisant enfler tout le cœur, elles poussent & ferment les cinq petites portes, qui sont aux entrées des deux vaisseaux d'où elles vienent, empeschant ainsi qu'il ne descende dauantage de sang dans le cœur ;

et continuant a se rarefier de plus en plus, elles poussent & ouurent les six autres petites portes, qui sont aux entrées des deux autres vaisseaux par où elles sortent, faisant enfler par ce moyen toutes les branches de la vene arterieuse & de la grande artere, quasi au mesme instant que le cœur ; lequel, incontinent aprés, se desenfle, comme font aussy ces arteres, a cause que le sang qui y est entré s'y refroidist, & leurs six petites portes se referment, & les cinq de la vene caue & de l'artere veneuse se rouurent, & donnent passage a [50] deux autres gouttes de sang, qui font derechef enfler le cœur & les arteres, tout de mesme que les precedentes.

AT 50 Et pourceque le sang, qui entre ainsi dans le cœur, passe par ces deux bourses qu'on nomme ses oreilles, de là vient que leur mouuement est contraire au sien, &

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much harder and firmer composition than the venous artery and the vena cava; that these last two widen before entering the heart and form there two pouches, as it were, called the auricles of the heart, which are made of flesh similar to the heart's own; that there is always more heat in the heart than in any other place in the body; and finally, that this heat is capable of making any drop of blood that enters its cavities swell promptly and [49] expand, as all liquids generally do when they are let fall drop by drop into some very hot vessel.

For after this, I need say nothing more to explain the movement of the heart than the following. When its cavities are not full of blood, blood necessarily flows into them—from the vena cava into the right one, and from the venous artery into the left—since these two vessels are always full of it, and their openings, which face the heart, cannot then be blocked. But as soon as two drops of blood have entered in this way, one into each of its cavities, these drops—which cannot help being very large, because the openings through which they enter are very wide and the vessels they come from very full of blood—become rarefied and expand because of the heat they find there. By this means, making the whole heart swell, they push and close the five little doors at the entrances of the two vessels they came from, thus preventing any more blood from coming down into the heart;

and, continuing to rarefy more and more, they push and open the six other little doors at the entrances of the two other vessels through which they leave, thereby making all the branches of the arterial vein and of the great artery swell almost at the same instant as the heart. Immediately afterward the heart subsides, as do these arteries, because the blood that has entered them cools there; their six little doors close again, and the five of the vena cava and the venous artery reopen and give passage to [50] two more drops of blood, which make the heart and arteries swell again, just as the previous ones did.

And because the blood that enters the heart in this way passes through the two pouches called its auricles, their movement is the opposite of the

5 The "arterial vein" is what we now call the pulmonary artery; the "venous artery" in the next paragraph is the pulmonary vein.
6 The "great artery" is the aorta.

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qu'elles se desenflent, lorsqu'il s'enfle. Au reste, affin que ceux qui ne connoissent pas la force des demonstrations Mathematiques, & ne sont pas accoutumez a distinguer les vrayes raisons des vraysemblables, ne se hasardent pas de nier cecy sans l'examiner, ie les veux auertir que ce mouuement, que ie vien d'expliquer, suit aussy necessairement de la seule disposition des organes qu'on peut voir a l'œil dans le cœur, & de la chaleur qu'on y peut sentir auec les doigts, & de la nature du sang qu'on peut connoistre par experience, que fait celuy d'vn horologe, de la force, de la situation, & de la figure de ses contrepois & de ses rouës.

Mais si on demande comment le sang des venes ne s'espuise point, en coulant ainsi continuellement dans le cœur, & comment les arteres n'en sont point trop remplies, puisque tout celuy qui passe par le cœur s'y va rendre, ie n'ay pas besoin d'y respondre autre chose, que ce qui a desia esté escrit par vn medecin d'Angleterre,[1] auquel il faut donner la louange d'auoir rompu la glace en cét endroit, & d'estre le premier qui a enseigné qu'il y a plusieurs petits passages aux extremitez des arteres, par où le sang qu'elles reçoiuent du cœur entre dans les petites branches des venes, d'où il se va rendre derechef vers le cœur, en sorte que son cours n'est autre chose qu'vne [51] circulation perpetuelle.

AT 51 Ce qu'il prouue fort bien, par l'experience ordinaire des chirurgiens, qui ayant lié le bras mediocrement fort, au dessus de l'endroit où ils ouurent la vene, font que le sang en sort plus abondamment que s'ils ne l'auoient point lié. Et il arriueroit tout le contraire, s'ils le lioient au dessous, entre la main & l'ouuerture, ou bien, qu'ils le liassent tres fort au-dessus.

Car il est manifeste que le lien mediocrement serré, pouuant empescher que le sang qui est desia dans le bras ne retourne vers le cœur par les venes, n'empesche pas pour cela qu'il n'y en viene tousiours de nouueau par les arteres, a cause qu'elles sont situées au dessous des venes, & que leurs peaux, estant plus dures, sont moins aysées a presser, & aussy que le sang qui vient du cœur tend auec plus de force a passer par elles vers la main, qu'il ne fait a retourner de là vers le cœur par les venes.

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heart's: they subside when it swells. For the rest, so that those who do not know the force of mathematical demonstrations, and are not used to distinguishing true reasons from merely probable ones, do not venture to deny this without examining it, I want to warn them that the movement I have just explained follows just as necessarily from the mere arrangement of the organs, which can be seen with the eye in the heart, from the heat, which can be felt there with the fingers, and from the nature of the blood, which can be known by experience, as the movement of a clock follows from the force, position and shape of its weights and wheels.

But if you ask how the blood in the veins is not used up, flowing continually into the heart in this way, and how the arteries are not overfilled with it, since all the blood that passes through the heart goes on into them, I need give no other answer than what has already been written by an English physician,[1] who deserves praise for having broken the ice on this point, and for being the first to teach that there are many small passages at the ends of the arteries, through which the blood they receive from the heart enters the small branches of the veins, from which it goes back again toward the heart; so that its course is nothing but a [51] perpetual circulation.[7]

He proves this very well by the ordinary experience of surgeons. When they have tied the arm moderately tight above the place where they open the vein, they make the blood come out more abundantly than if they had not tied it. And quite the opposite would happen if they tied it below, between the hand and the opening, or else tied it very tight above.

For it is obvious that a moderately tight tie, while it can prevent the blood already in the arm from returning to the heart through the veins, does not for all that prevent new blood from continually arriving through the arteries. This is because the arteries lie beneath the veins, and their walls, being harder, are less easily compressed; and also because the blood coming from the heart tends with greater force to pass through them toward the

7 William Harvey (1578–1657), whose *On the Motion of the Heart and Blood in Animals* (1628) established the circulation of the blood.

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Et puisque ce sang sort du bras par l'ouuerture qui est en l'vne des venes, il doit necessairement y auoir quelques passages au-dessous du lien, c'est a dire vers les extremitez du bras, par où il y puisse venir des arteres.

Il prouue aussy fort bien ce qu'il dit du cours du sang, par certaines petites peaux, qui sont tellement disposées en diuers lieux le long des venes, qu'elles ne luy permetent point d'y passer du milieu du cors vers les extremitez, mais seulement de retourner des extremitez vers le cœur ; et de plus, par l'experience qui monstre que tout celuy qui est dans le cors en peut sortir en fort peu de tems par vne seule artere, lorsqu'elle est coupée, encore mesme qu'elle fust estroitement liée fort proche du cœur, & coupée entre luy & le lien, en sorte qu'on [52] n'eust aucun suiet d'imaginer que le sang qui en sortiroit vint d'ailleurs.

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AT 52 Mais il y a plusieurs autres choses qui tesmoignent que la vraye cause de ce mouuement du sang est celle que i'ay dite. Comme, premierement, la difference qu'on remarque entre celuy qui sort des venes & celuy qui sort des arteres, ne peut proceder que de ce qu'estant rarefié, & comme distilé, en passant par le cœur, il est plus subtil & plus vif & plus chaud incontinent aprés en estre sorti, c'est a dire, estant dans les arteres, qu'il n'est vn peu deuant que d'y entrer, c'est a dire, estant dans les venes. Et si on y prend garde, on trouuera que cete difference ne paroist bien que vers le cœur, & non point tant aux lieux qui en sont les plus esloignez.

Puis la dureté des peaux, dont la vene arterieuse & la grande artere sont composées, monstre assez que le sang bat contre elles auec plus de force que contre les venes. Et pourquoy la concauité gauche du cœur & la grande artere seroient elles plus amples & plus larges, que la concauité droite & la vene arterieuse ? Si ce n'estoit que le sang de l'artere veneuse, n'ayant esté que dans les poumons depuis qu'il a passé par le cœur, est plus subtil & se rarefie plus fort & plus aysement, que celuy qui vient immediatement de la vene caue.

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hand than it does to return from there to the heart through the veins.

And since this blood leaves the arm through the opening in one of the veins, there must necessarily be some passages below the tie—that is, toward the extremities of the arm—through which it can come there from the arteries.

He also proves very well what he says about the course of the blood by certain small membranes, arranged at various places along the veins in such a way that they do not allow the blood to pass along them from the middle of the body toward the extremities, but only to return from the extremities toward the heart. And further, by the experience which shows that all the blood in the body can flow out of it in a very short time through a single artery when it is cut, even if it has been tightly tied very close to the heart and cut between the heart and the tie, so that there [52] could be no reason to imagine that the blood flowing out came from anywhere else.

But there are many other things which attest that the true cause of this movement of the blood is the one I have given. First, the difference we notice between the blood that comes out of the veins and the blood that comes out of the arteries can only arise from this: having been rarefied, and as it were distilled, in passing through the heart, it is finer, livelier and warmer just after leaving it—that is, when it is in the arteries—than it is shortly before entering it—that is, when it is in the veins. And if you pay attention, you will find that this difference is clearly apparent only near the heart, and not so much in the places farthest from it.

Then the hardness of the walls of which the arterial vein and the great artery are composed shows well enough that the blood beats against them with more force than against the veins. And why would the left cavity of the heart and the great artery be ampler and wider than the right cavity and the arterial vein, unless it were that the blood of the venous artery, having been only in the lungs since it passed through the heart, is finer and rar-

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[1] Heruæus, *de motu cordis*.

[1] Harvey, *On the Motion of the Heart*.

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Et qu'est-ce que les medecins peuuent deuiner, en tastant le pouls, s'ils ne sçauent que, selon que le sang change de nature, il peut estre rarefié par la chaleur du cœur plus ou moins fort, & plus ou moins viste qu'auparauant ? Et si on examine comment cette chaleur se communique aux autres membres, ne faut-il pas auouër que c'est [53] par le moyen du sang, qui passant par le cœur s'y reschauffe, & se respand de là par tout le cors.

AT 53 D'où vient que, si on oste le sang de quelque partie, on en oste par mesme moyen la chaleur ; et encore que le cœur fust aussy ardent qu'vn fer embrasé, il ne suffiroit pas pour reschauffer les pieds & les mains tant qu'il fait, s'il n'y enuoyoit continuellement de nouueau sang.

Puis aussy on connoist de là, que le vray vsage de la respiration est d'apporter assez d'air frais dans le poumon, pour faire que le sang, qui y vient de la concauité droite du cœur, où il a esté rarefié & comme changé en vapeurs, s'y espaississe, & conuertisse en sang derechef, auant que de retomber dans la gauche, sans quoy il ne pourroit estre propre a seruir de nouriture au feu qui y est.

Ce qui se confirme, parce qu'on void que les animaux qui n'ont point de poumons, n'ont aussy qu'vne seule concauité dans le cœur, & que les enfans, qui n'en peuuent vser pendant qu'ils sont renfermez au ventre de leurs meres, ont vne ouuerture par où il coule du sang de la vene caue en la concauité gauche du cœur, & vn conduit par où il en vient de la vene arterieuse en la grande artere, sans passer par le poumon. Puis la coction, comment se feroit-elle en l'estomac, si le cœur n'y enuoyoit de la chaleur par les arteres, & auec cela quelques vnes des plus coulantes parties du sang, qui aydent a dissoudre les viandes qu'on y a mises ?

Et l'action qui conuertist le suc de ces viandes en sang, n'est elle pas aysée a connoistre, si on considere qu'il se distile, en passant & repassant par le cœur, peutestre par plus de cent ou deux cent fois en chasque iour ?

Et qu'a-t-on besoin d'autre chose, [54] pour expliquer la nutrition, & la production des diuerses humeurs qui sont dans le cors, sinon de dire que la force, dont le sang en se rarefiant passe du cœur vers les extremitez des arteres, fait que quelques vnes de ses parties s'arestent entre celles des membres où elles se trouuent, & y prenent la

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efies more strongly and more easily than the blood that comes directly from the vena cava?

And what can physicians find out by feeling the pulse, unless they know that, as the blood changes in nature, it can be rarefied by the heat of the heart more or less strongly, and more or less quickly, than before? And if we examine how this heat is communicated to the other limbs, must we not admit that it is [53] by means of the blood, which is reheated as it passes through the heart and spreads from there throughout the body?

Hence, if you remove the blood from any part, you remove its heat by the same token; and even if the heart were as hot as a red-hot iron, it would not be enough to warm the feet and hands as it does, if it did not continually send new blood to them.

Then too we learn from this that the true purpose of breathing is to bring enough fresh air into the lungs to make the blood that comes there from the right cavity of the heart—where it has been rarefied and, as it were, changed into vapor—thicken and turn into blood again before it falls back into the left cavity. Without this it could not be fit to serve as fuel for the fire that is there.

This is confirmed by the fact that animals without lungs also have only one cavity in the heart, and that unborn children, who cannot use their lungs while they are enclosed in their mothers' wombs, have an opening through which blood flows from the vena cava into the left cavity of the heart, and a duct through which it passes from the arterial vein into the great artery without going through the lungs. Then, how would digestion take place in the stomach if the heart did not send heat there through the arteries, and with it some of the most fluid parts of the blood, which help to dissolve the food put there?

And is the action that converts the juice of this food into blood not easy to understand, if we consider that it is distilled by passing and repassing through the heart, perhaps more than one or two hundred times each day?

And what more do we need, [54] to explain nutrition and the production of the various humors in the body, than to say this: the force with which the blood, as it rarefies, passes from the heart toward the ends of the arteries makes some of its parts come to rest among those of the limbs where they

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	place de quelques autres quelles en chassent ; et que, selon la situation, ou la figure, ou la petitesse des pores qu'elles rencontrent, les vnes se vont rendre en certains lieux plutost que les autres, en mesme façon que chascun peut auoir vû diuers cribles, qui estant diuersement percez seruent a separer diuers grains les vns des autres ?	find themselves, and take the place of some other parts, which they drive out; and, depending on the position, the shape or the smallness of the pores they meet, some go to certain places rather than others—in the same way as anyone may have seen various sieves, pierced in different ways, serve to separate different grains from one another?
AT 54	Et enfin ce qu'il y a de plus remarquable en tout cecy, c'est la generation des esprits animaux, qui sont comme vn vent tres subtil, ou plutost comme vne flame tres pure & tres viue, qui, montant continuellement en grande abondance du cœur dans le cerueau, se va rendre de là par les nerfs dans les muscles, & donne le mouuement a tous les membres ; sans qu'il faille imaginer d'autre cause, qui face que les parties du sang, qui, estant les plus agitées & les plus penetrantes, sont les plus propres a composer ces esprits, se vont rendre plutost vers le cerueau que vers ailleurs ;	And finally, the most remarkable thing in all this is the generation of the animal spirits. They are like a very fine wind, or rather like a very pure and lively flame, which, rising continually and in great abundance from the heart into the brain, passes from there through the nerves into the muscles and gives movement to all the limbs. We need not imagine any other cause that makes the parts of the blood which, being the most agitated and penetrating, are the most suitable for composing these spirits, go toward the brain rather than elsewhere,[9]
	sinon que les arteres, qui les y portent, sont celles qui vienent du cœur le plus en ligne droite de toutes, & que, selon les regles des Mechaniques, qui sont les mesmes que celles de la nature, lorsque plusieurs choses tendent ensemble a se mouuoir vers vn mesme costé, où il n'y a pas assez de place pour toutes, ainsi que les parties du sang qui sortent de la concauité gauche du cœur tendent vers le cerueau, [55] les plus foibles & moins agitées en doiuent estre détournées par les plus fortes, qui par ce moyen s'y vont rendre seules.	than this: the arteries that carry them there are the ones that come from the heart in the straightest line of all; and, according to the rules of mechanics, which are the same as those of nature, when several things tend together to move toward the same place, where there is not enough room for all of them—as the parts of the blood leaving the left cavity of the heart tend toward the brain— [55] the weaker and less agitated ones must be turned aside by the stronger, which in this way go there alone.
AT 55	I'auois expliqué assez particulierement toutes ces choses, dans le traité que i'auois eu cy deuant dessein de publier. Et ensuite i'y auois monstré quelle doit estre la fabrique des nerfs & des muscles du cors humain, pour faire que les esprits animaux, estant dedans, ayent la force de mouuoir ses membres : ainsi qu'on voit que les testes, vn peu aprés estre coupées, se remuent encore, & mordent la terre, nonobstant qu'elles ne soient plus animées ; quels changemens se doiuent faire dans le cerueau, pour causer la veille, & le sommeil, & les songes ; comment la lumiere, les sons, les odeurs, les gouts, la chaleur, & toutes les autres qualitez des obiets exterieurs y peuuent imprimer diuerses idées, par l'entremise des sens ;	I had explained all these things in some detail in the treatise I had earlier intended to publish. Next I had shown there what the structure of the nerves and muscles of the human body must be for the animal spirits within them to have the power to move its limbs—as we see that heads, shortly after being cut off, still move and bite the ground, although they are no longer alive. I had shown what changes must take place in the brain to cause waking, sleep and dreams; how light, sounds, smells, tastes, heat and all the other qualities of external objects can imprint various ideas on it through the senses;[10]
	comment la faim, la soif, & les autres passions interieures, y peuuent aussy enuoyer les leurs ; ce qui	how hunger, thirst and the other internal passions can also send their ideas there; what must be

9 "Animal spirits" (from Latin *anima,* soul) were the very fine material fluid then thought to carry motion and sensation through the nerves.

10 The physiology summarized here survives as the *Treatise on Man,* part of *The World,* published only after Descartes's death.

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doit y estre pris pour le sens commun, où ces idées sont receuës ; pour la memoire, qui les conserue ; & pour la fantaisie, qui les peut diuersement changer, & en composer de nouuelles, & par mesme moyen, distribuant les espris animaux dans les muscles, faire mouuoir les membres de ce cors, en autant de diuerses façons, & autant a propos des obiets qui se presentent a ses sens, & des passions interieures qui sont en luy, que les nostres se puissent mouuoir, sans que la volonté les conduise.

Ce qui ne semblera nullement estrange a ceux qui, sçachant combien de diuers *automates,* ou machines mouuantes, l'industrie des hommes peut [56] faire, sans y employer que fort peu de pieces, a comparaison de la grande multitude des os, des muscles, des nerfs, des arteres, des venes, & de toutes les autres parties, qui sont dans le cors de chasque animal, considereront ce cors comme vne machine, qui, ayant esté faite des mains de Dieu, est incomparablement mieux ordonnée, & a en soy des mouuemens plus admirables, qu'aucune de celles qui peuuent estre inuentées par les hommes.

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taken to be the common sense, where these ideas are received; the memory, which preserves them; and the imagination, which can change them in various ways and compose new ones out of them, and by the same means, distributing the animal spirits into the muscles, make the limbs of this body move in as many different ways, and as appropriately to the objects presented to its senses and to the internal passions within it, as our own limbs can move without the will directing them.[11]

This will not seem at all strange to those who know how many different *automata,* or moving machines, human ingenuity can [56] make, using only very few parts compared with the great multitude of bones, muscles, nerves, arteries, veins and all the other parts in the body of every animal. They will consider this body as a machine which, having been made by the hands of God, is incomparably better ordered, and has more admirable movements in it, than any machine that can be invented by human beings.

MACHINES, ANIMALS AND HUMAN BEINGS

Descartes gives two tests, language and adaptable reason, that distinguish humans from machines and animals.

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AT 56 Et ie m'estois icy particulierement aresté a faire voir que, s'il y auoit de telles machines, qui eussent les organes & la figure d'vn singe, ou de quelque autre animal sans raison, nous n'aurions aucun moyen pour reconnoistre qu'elles ne seroient pas en tout de mesme nature que ces animaux ; au lieu que, s'il y en auoit qui eussent la ressemblance de nos cors, & imitassent autant nos actions que moralement il seroit possible, nous aurions tousiours deux moyens tres certains, pour reconnoistre qu'elles ne seroient point pour cela de vrais hommes. Dont le premier est que iamais elles ne pourroient vser de paroles, ny d'autres signes en les composant, comme nous faisons pour declarer aux autres nos pensées.

Car on peut bien conceuoir qu'vne machine soit tellement faite qu'elle profere des paroles, & mesme qu'elle en profere quelques vnes a propos des actions corporelles qui causeront quelque changement en ses organes : comme, si on la touche en quelque endroit, qu'elle demande ce qu'on luy veut dire ; si en vn autre, qu'elle crie qu'on luy fait mal, & choses semblables ; mais non pas qu'elle les arrenge diuersement, pour [57]

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And here I had dwelt in particular on showing that if there were machines that had the organs and outward shape of a monkey, or of some other animal without reason, we would have no means of recognizing that they were not of exactly the same nature as those animals. Whereas if there were machines that resembled our bodies and imitated our actions as closely as is practically possible, we would always have two very certain means of recognizing that they were not, for all that, real human beings. The first is that they could never use words, or other signs composed of them, as we do to declare our thoughts to others.

For we can well conceive of a machine so made that it utters words, and even utters some words appropriate to bodily actions that cause some change in its organs—for instance, if you touch it in one place, it asks what you want of it; if in another, it cries out that you are hurting it; and so on. But we cannot conceive that it would arrange them in various ways so as to [57] respond to the

11 The "common sense" is the traditional faculty in the brain where the data of the separate senses are brought together.

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respondre au sens de tout ce qui se dira en sa presence, ainsi que les hommes les plus hebetez peuuent faire.

AT 57 Et le second est que, bien qu'elles fissent plusieurs choses aussy bien, ou peutestre mieux qu'aucun de nous, elles manqueroient infalliblement en quelques autres, par lesquelles on découuriroit quelles n'agiroient pas par connoissance, mais seulement par la disposition de leurs organes. Car, au lieu que la raison est vn instrument vniuersel, qui peut seruir en toutes sortes de rencontres, ces organes ont besoin de quelque particuliere disposition pour chaque action particuliere ; d'où vient qu'il est moralement impossible qu'il y en ait assez de diuers en vne machine, pour la faire agir en toutes les occurrences de la vie, de mesme façon que nostre raison nous fait agir.

Or, par ces deux mesmes moyens, on peut aussy connoistre la difference, qui est entre les hommes & les bestes. Car c'est vne chose bien remarquable, qu'il n'y a point d'hommes si hebetez & si stupides, sans en excepter mesme les *[malades mentaux]*, qu'ils ne soient capables d'arrenger ensemble diuerses paroles, & d'en composer vn discours par lequel ils facent entendre leurs pensées ; et qu'au contraire, il n'y a point d'autre animal, tant parfait & tant heureusement né qu'il puisse estre, qui face le semblable.

Ce qui n'arriue pas de ce qu'ils ont faute d'organes, car on voit que les pies & les perroquets peuuent proferer des paroles ainsi que nous, & toutefois ne peuuent parler ainsi que nous, c'est a dire, en tesmoignant qu'ils pensent ce qu'ils disent ; au lieu que les hommes qui, estans nés sours & muets, sont priuez des organes qui seruent aux [58] autres pour parler, autant ou plus que les bestes, ont coustume d'inuenter d'eux mesmes quelques signes, par lesquels ils se font entendre a ceux qui, estans ordinairement auec eux, ont loysir d'apprendre leur langue. Et cecy ne tesmoigne pas seulement que les bestes ont moins de raison que les hommes, mais qu'elles n'en ont point du tout.

AT 58 Car on voit qu'il n'en faut que fort peu, pour sçauoir parler ; & d'autant qu'on remarque de l'inesgalité entre les animaux d'vne mesme espece, aussy bien qu'entre les hommes, & que les vns sont plus aysez a dresser que les autres, il n'est pas croyable qu'vn singe ou vn perroquet, qui seroit des plus parfaits de son especе, n'égalast en cela vn enfant des plus stupides, ou du moins vn enfant qui auroit le cerueau troublé, si leur ame n'estoit d'vne nature du tout differente de la nostre.

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meaning of everything said in its presence, as even the dullest human beings can do.

And the second is that, although they might do many things as well as any of us, or perhaps better, they would inevitably fail in certain others, by which we would discover that they were acting not through knowledge but only through the arrangement of their organs. For whereas reason is a universal instrument that can serve in every kind of situation, these organs need some particular arrangement for each particular action. Hence it is practically impossible for a machine to have enough different ones to make it act in all the occurrences of life in the way our reason makes us act.

Now by these same two means we can also know the difference between human beings and beasts. For it is a very remarkable thing that there are no human beings so dull and stupid—not even excepting people who are mentally ill—that they are not capable of arranging various words together and composing from them a discourse by which they make their thoughts understood; whereas, on the contrary, there is no other animal, however perfect and however well endowed from birth it may be, that does the same.

This does not come about because they lack the organs, for we see that magpies and parrots can utter words just as we do, and yet cannot speak as we do—that is, by showing that they think what they are saying. Whereas people born deaf and mute, who are deprived of the organs that serve [58] others for speaking as much as beasts are, or more, usually invent certain signs by themselves, by which they make themselves understood by those who, being regularly with them, have the leisure to learn their language. And this shows not merely that beasts have less reason than human beings, but that they have none at all.

For we see that very little is needed to be able to speak. And since we notice inequality among animals of the same species, just as among human beings, and some are easier to train than others, it is not credible that a monkey or a parrot that was among the most perfect of its species would not equal in this the most stupid of children, or at least a child with a disordered brain, unless their soul were of a nature entirely different from ours.

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Et on ne doit pas confondre les paroles auec les mouuemens naturels, qui tesmoignent les passions, & peuuent estre imitez par des machines aussy bien que par les animaux ; ny penser, comme quelques Anciens, que les bestes parlent, bien que nous n'entendions pas leur langage : car s'il estoit vray, puisqu'elles ont plusieurs organes qui se rapportent aux nostres, elles pourroient aussy bien se faire entendre a nous qu'a leurs semblables.

C'est aussy vne chose fort remarquable que, bien qu'il y ait plusieurs animaux qui tesmoignent plus d'industrie que nous en quelques vnes de leurs actions, on voit toutefois que les mesmes n'en tesmoignent point du tout en beaucoup d'autres : de façon que ce qu'ils font mieux que nous, ne prouue pas qu'ils ont de l'esprit ; car, a ce conte, ils en auroient plus qu'aucun de nous, & [59] feroient mieux en toute chose ; mais plutost qu'ils n'en ont point, & que c'est la Nature qui agist en eux, selon la disposition de leurs organes : ainsi qu'on voit qu'vn horologe, qui n'est composé que de rouës & de ressors, peut conter les heures, & mesurer le tems, plus iustement que nous auec toute nostre prudence.

AT 59 I'auois descrit, aprés cela, l'ame raisonnable, & fait voir qu'elle ne peut aucunement estre tirée de la puissance de la matiere, ainsi que les autres choses dont i'auois parlé, mais qu'elle doit expressement estre creée ; et comment il ne suffit pas qu'elle soit logée dans le cors humain, ainsi qu'vn pilote en son nauire, sinon peutestre pour mouuoir ses membres, mais qu'il est besoin qu'elle soit iointe & vnie plus estroitement auec luy, pour auoir, outre cela, des sentimens & des appetits semblables aux nostres, & ainsi composer vn vray homme.

Au reste, ie me suis icy vn peu estendu sur le suiet de l'ame, a cause qu'il est des plus importans ; car, aprés l'erreur de ceux qui nient Dieu, laquelle ie pense auoir cy dessus assez refutée, il n'y en a point qui esloigne plutost les esprits foibles du droit chemin de la vertu, que d'imaginer que l'ame des bestes soit de mesme nature que la nostre, & que, par consequent, nous n'auons rien a craindre, ny a esperer, aprés cete vie, non plus que les mouches & les fourmis ; au lieu que, lorsqu'on sçait combien elles different, on comprent beaucoup mieux les raisons, qui prouuent que la nostre est d'vne nature entierement independante du cors, & par consequent, qu'elle n'est point suiette a mourir auec luy ; puis, d'autant [60] qu'on ne voit point d'autres causes qui la destruisent, on est naturellement porté a iuger de là qu'elle est immortelle.

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And we must not confuse words with natural movements, which express the passions and can be imitated by machines as well as by animals; nor think, like some of the ancients, that beasts speak although we do not understand their language. For if that were true, since they have many organs corresponding to ours, they could make themselves understood by us as well as by their own kind.

It is also a very remarkable thing that, although there are many animals that show more skill than we do in some of their actions, we see that the same animals show none at all in many others. So what they do better than we do does not prove that they have a mind—for on that reckoning they would have more of it than any of us, and [59] would do better in everything—but rather that they have none, and that it is nature that acts in them according to the arrangement of their organs. In the same way we see that a clock, made only of wheels and springs, can count the hours and measure time more accurately than we can with all our wisdom.

After that I had described the rational soul, and shown that it can in no way be derived from the power of matter, like the other things I had spoken of, but must be expressly created; and how it is not enough for it to be lodged in the human body like a pilot in his ship—except perhaps to move its limbs—but that it must be joined and united more closely with it in order to have, in addition, feelings and appetites like ours, and so make up a real human being.

For the rest, I have dwelt here a little on the subject of the soul, because it is one of the most important. For after the error of those who deny God, which I think I have refuted well enough above, there is none that leads weak minds further from the straight road of virtue than imagining that the soul of beasts is of the same nature as ours, and that consequently we have nothing to fear or to hope for after this life, any more than flies and ants. Whereas, when we know how much they differ, we understand much better the reasons which prove that our soul is of a nature entirely independent of the body, and consequently that it is not bound to die with it. Then, since [60] we see no

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	other causes that destroy it, we are naturally led to judge from this that it is immortal.

Part Six

What is needed to advance the study of nature
Why Descartes published, and why he wrote in French.

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AT 60	Or il y a maintenant trois ans que i'estois paruenu a la fin du traité qui contient toutes ces choses, & que ie commençois a le reuoir, affin de le mettre entre les mains d'vn imprimeur, lorsque i'appris que des personnes, a qui ie defere & dont l'authorité ne peut gueres moins sur mes actions, que ma propre raison sur mes pensées, auoient desapprouué vne opinion de Physique, publiée vn peu auparauant par quelque autre, de laquelle ie ne veux pas dire que ie fusse, mais bien que ie n'y auois rien remarqué,	Now it is three years since I had reached the end of the treatise that contains all these things, and was beginning to revise it in order to put it into the hands of a printer, when I learned that persons to whom I defer, and whose authority over my actions is hardly less than that of my own reason over my thoughts, had disapproved of an opinion in physics published a little earlier by someone else. I do not want to say that I held this opinion, but only that I had noticed nothing in it,[1]
	auant leur censure, que ie pusse imaginer estre preiudiciable ny a la Religion ny a l'Estat, ny, par consequent, qui m'eust empesché de l'escrire, si la raison me l'eust persuadée, & que cela me fit craindre qu'il ne s'en trouuast tout de mesme quelqu'vne entre les mienes, en laquelle ie me fusse mépris, nonobstant le grand soin que i'ay tousiours eu de n'en point receuoir de nouuelles en ma creance, dont ie n'eusse des demonstrations tres certaines, & de n'en point escrire, qui pussent tourner au desauantage de personne.	before their censure, that I could imagine to be harmful either to religion or to the state, nor, consequently, anything that would have prevented me from writing it if reason had persuaded me of it. And this made me fear that there might likewise be some opinion among my own in which I had been mistaken, despite the great care I have always taken not to admit any new ones into my beliefs without very certain demonstrations of them, and not to write any that could turn to anyone's disadvantage.
	Ce qui a esté suffisant, pour m'obliger a changer la resolution que i'auois euë de les publier. Car, encore que les raisons, pour lesquelles ie l'auois prise auparauant, fussent tres fortes, mon inclination, qui m'a tousiours fait haïr le mestier de faire des liures, m'en fit incontinent trouuer assez d'autres, pour m'en excuser. Et ces raisons de part & d'autre sont telles, que non [61] seulement i'ay icy quelque interest de les dire, mais peut-estre aussy que le public en a de les sçauoir.	This was enough to make me change my resolution to publish them. For although the reasons for which I had previously made it were very strong, my inclination, which has always made me hate the business of writing books, immediately made me find enough others to excuse myself from it. And these reasons, on both sides, are such that not [61] only do I have some interest in stating them here, but perhaps the public also has some interest in knowing them.

MASTERS AND POSSESSORS OF NATURE

Descartes explains why useful knowledge of nature, above all in medicine, obliged him to share his findings.

	FRENCH	ENGLISH
AT 61	Ie n'ay iamais fait beaucoup d'estat des choses qui venoient de mon esprit, & pendant que ie n'ay recueilly	I have never set much store by the things that came from my own mind. As long as the only

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d'autres fruits de la methode dont ie me sers, sinon que ie me suis satisfait, touchant quelques difficultez qui appartienent aux sciences speculatiues, ou bien que i'ay tasché de regler mes meurs par les raisons qu'elle m'enseignoit, ie n'ay point creu estre obligé d'en rien escrire.

Car, pour ce qui touche les meurs, chascun abonde si fort en son sens, qu'il se pourroit trouuer autant de reformateurs que de testes, s'il estoit permis a d'autres qu'a ceux que Dieu a establis pour souuerains sur ses peuples, ou bien ausquels il a donné assez de grace & de zele pour estre prophetes, d'entreprendre d'y rien changer ; et bien que mes speculations me pleussent fort, i'ay creu que les autres en auoient aussy, qui leur plaisoient peut-estre dauantage.

Mais, sitost que i'ay eu acquis quelques notions generales touchant la Physique, & que, commençant a les esprouuer en diuerses difficultez particulieres, i'ay remarqué iusques où elles peuuent conduire, & combien elles different des principes dont on s'est serui iusques a present, i'ay creu que ie ne pouuois les tenir cachées, sans pecher grandement contre la loy qui nous oblige a procurer, autant qu'il est en nous, le bien general de tous les hommes.

Car elles m'ont fait voir qu'il est possible de paruenir a des connoissances qui soient fort vtiles a la vie, & qu'au lieu de cete Philosophie speculatiue, qu'on enseigne dans les escholes, on en peut trouuer [62] vne pratique, par laquelle connoissant la force & les actions du feu, de l'eau, de l'air, des astres, des cieux, & de tous les autres cors qui nous enuironnent, aussy distinctement que nous connoissons les diuers mestiers de nos artisans, nous les pourrions employer en mesme façon a tous les vsages ausquels ils sont propres, & ainsi nous rendre comme maistres & possesseurs de la Nature.

AT 62 Ce qui n'est pas seulement a desirer pour l'inuention d'vne infinité d'artifices, qui feroient qu'on iouiroit, sans aucune peine, des fruits de la terre & de toutes les commoditez qui s'y trouuent, mais principalement aussy pour la conseruation de la santé, laquelle est sans doute le premier bien, & le fondement de tous les autres biens de cete vie ; car mesme l'esprit depend si fort du temperament, & de la disposition des organes du cors, que s'il est possible de trouuer quelque moyen, qui rende communement les hommes plus sages & plus habiles

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fruits I gathered from the method I use were that I satisfied myself concerning some difficulties belonging to the speculative sciences, or that I tried to govern my conduct by the reasons it taught me, I did not believe I was obliged to write anything about it.

For as regards conduct, everyone is so full of his own opinions that there could be as many reformers as heads, if it were permitted to undertake any change in it to anyone other than those whom God has established as sovereigns over his peoples, or those to whom he has given enough grace and zeal to be prophets. And although my speculations pleased me greatly, I believed that others had their own, which perhaps pleased them more.

But as soon as I had acquired some general notions in physics, and, beginning to test them on various particular difficulties, had noticed how far they can lead and how much they differ from the principles that have been used up to now, I believed that I could not keep them hidden without sinning gravely against the law that obliges us to bring about, as far as is in our power, the general good of all human beings.

For they showed me that it is possible to arrive at knowledge that would be very useful in life; and that, instead of the speculative philosophy taught in the schools, we can find [62] a practical one, by which, knowing the force and actions of fire, water, air, the stars, the heavens and all the other bodies around us as distinctly as we know the various trades of our craftsmen, we could use them in the same way for all the purposes for which they are suited, and thus make ourselves, as it were, masters and possessors of nature.

This is desirable not only for the invention of an infinity of devices that would let us enjoy, without any effort, the fruits of the earth and all the comforts found there, but also, and above all, for the preservation of health, which is undoubtedly the first good and the foundation of all the other goods of this life. For even the mind depends so heavily on the temperament and on the arrangement of the bodily organs that, if it is possible to find some means that would generally make people wiser

1 The allusion is to the condemnation of Galileo by the Roman Inquisition in 1633 for defending the motion of the earth.

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qu'ils n'ont esté iusques icy, ie croy que c'est dans la Medecine qu'on doit le chercher.

Il est vray que celle qui est maintenant en vsage, contient peu de choses dont l'vtilité soit si remarquable ; mais, sans que i'aye aucun dessein de la mespriser, ie m'assure qu'il n'y a personne, mesme de ceux qui en font profession, qui n'auouë que tout ce qu'on y sçait n'est presque rien, a comparaison de ce qui reste a y sçauoir, & qu'on se pourroit exemter d'vne infinité de maladies, tant du cors que de l'esprit, & mesme aussy peutestre de l'affoiblissement de la vieillesse, si on auoit assez de connoissance de leurs causes, & de tous les remedes dont la Nature nous a pourueus.

Or, ayant dessein [63] d'employer toute ma vie a la recherche d'vne science si necessaire, & ayant rencontré vn chemin qui me semble tel qu'on doit infalliblement la trouuer, en le suiuant, si ce n'est qu'on en soit empesché, ou par la brieueté de la vie, ou par le defaut des experiences, ie iugeois qu'il n'y auoit point de meilleur remede contre ces deux empeschemens, que de communiquer fidellement au public tout le peu que i'aurois trouué, & de conuier les bons esprits a tascher de passer plus outre, en contribuant, chascun selon son inclination & son pouuoir, aux experiences qu'il faudroit faire, & communiquant aussy au public toutes les choses qu'ils apprendroient, affin que les derniers commençant ou les precedens auroient acheué, & ainsi ioignant les vies & les trauaux de plusieurs, nous allassions tous ensemble beaucoup plus loin, que chascun en particulier ne sçauroit faire.

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and more capable than they have been up to now, I believe it is in medicine that we must look for it.

It is true that the medicine now practiced contains few things whose usefulness is so remarkable. But, without having any intention of disparaging it, I am sure there is no one, even among those who practice it, who would not admit that everything known in it is almost nothing compared with what remains to be known; and that we could free ourselves from an infinity of diseases, of the mind as well as of the body, and perhaps even from the weakening of old age, if we had enough knowledge of their causes and of all the remedies with which nature has provided us.

Now, intending [63] to devote my whole life to the pursuit of so necessary a science, and having found a path which seems to me such that, by following it, one must infallibly find it, unless prevented either by the shortness of life or by the lack of experiments, I judged that there was no better remedy against these two obstacles than to communicate faithfully to the public all the little I had found, and to invite good minds to try to go further, each contributing, according to his inclination and his ability, to the experiments that would have to be made, and also communicating to the public everything they learned. In this way, the later ones beginning where their predecessors had left off, and so joining together the lives and labors of many, we might all together go much further than each one could on his own.

THE NEED FOR EXPERIMENTS

Descartes explains how he derived principles from God and why many experiments are now needed.

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AT 63 Mesme ie remarquois, touchant les experiences, qu'elles sont d'autant plus necessaires, qu'on est plus auancé en connoissance. Car, pour le commencement, il vaut mieux ne se seruir que de celles qui se presentent d'elles mesmes a nos sens, & que nous ne sçaurions ignorer, pouruû que nous y facions tant soit peu de reflexion, que d'en chercher de plus rares & estudiées : dont la raison est que ces plus rares trompent souuent, lorsqu'on ne sçait pas encore les causes des plus communes, & que les circonstances dont elles dependent sont quasi tousiours si particulieres & si petites, qu'il est tres malaysé de les remarquer. Mais l'ordre que i'ay tenu en cecy a esté tel.

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I even noticed, regarding experiments, that they become more necessary the further one has advanced in knowledge. For at the beginning it is better to use only those that present themselves to our senses of their own accord, and which we cannot be unaware of if we reflect on them even a little, than to look for rarer and more elaborate ones. The reason is that the rarer ones often mislead us when we do not yet know the causes of the more common ones, and the circumstances on which they depend are almost always so particular and so minute that they are very hard to no-

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Premierement, i'ay tasché de trouuer en general les [64] Principes, ou Premieres Causes, de tout ce qui est, ou qui peut estre, dans le monde, sans rien considerer, pour cet effet, que Dieu seul, qui l'a creé, ny les tirer d'ailleurs que de certaines semences de Veritez qui sont naturellement en nos ames. Aprés cela, i'ay examiné quels estoient les premiers & plus ordinaires effets qu'on pouuoit deduire de ces causes : et il me semble que, par la, i'ay trouué des Cieux, des Astres, vne Terre, & mesme, sur la terre, de l'Eau, de l'Air, du Feu, des Mineraux, & quelques autres telles choses, qui sont les plus communes de toutes & les plus simples, & par consequent les plus aysées a connoistre.

AT 64 Puis, lorsque i'ay voulu descendre a celles qui estoient plus particulieres, il s'en est tant presenté a moy de diuerses, que ie n'ay pas creu qu'il fust possible a l'esprit humain de distinguer les Formes ou Especes de cors qui sont sur la terre, d'vne infinité d'autres qui pourroient y estre, si c'eust esté le vouloir de Dieu de les y mettre, ny, par consequent, de les rapporter a nostre vsage, si ce n'est qu'on viene au deuant des causes par les effets, & qu'on se serue de plusieurs experiences particulieres.

En suite de quoy, repassant mon esprit sur tous les obiets qui s'estoient iamais presentez a mes sens, i'ose bien dire que ie n'y ay remarqué aucune chose que ie ne peusse assez commodement expliquer par les Principes que i'auois trouuez. Mais il faut aussy que i'auouë, que la puissance de la Nature est si ample & si vaste, & que ces Principes sont si simples & si generaux, que ie ne remarque quasi plus aucun effect particulier, que d'abord ie ne connoisse qu'il peut en [65] estre deduit en plusieurs diuerses façons, & que ma plus grande difficulté est d'ordinaire de trouuer en laquelle de ces façons il en depend.

AT 65 Car a cela ie ne sçay point d'autre expedient, que de chercher derechef quelques experiences, qui soient telles, que leur euenement ne soit pas le mesme, si c'est en l'vne de ces façons qu'on doit l'expliquer, que si c'est en l'autre.

Au reste, i'en suis maintenant la, que ie voy, ce me semble, assez bien de quel biaiz on se doit prendre a faire la plus part de celles qui peuuent seruir a cet effect ; mais ie voy aussy qu'elles sont telles, & en si grand nombre, que ny mes mains, ny mon reuenu, bien que i'en eusse mille fois plus que ie n'en ay, ne sçauroient suffire pour

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tice. But the order I have followed in this has been as follows.

First, I have tried to find in general the [64] principles, or first causes, of everything that is or can be in the world, without considering for this purpose anything but God alone, who created it, and without drawing them from anywhere but certain seeds of truth that are naturally in our souls. After that, I examined what were the first and most ordinary effects that could be deduced from these causes; and it seems to me that in this way I found heavens, stars, an earth, and even, on the earth, water, air, fire, minerals and some other such things, which are the most common and the simplest of all, and consequently the easiest to know.

Then, when I wanted to descend to more particular things, so many different ones presented themselves to me that I did not believe it possible for the human mind to distinguish the forms or species of bodies that are on the earth from an infinity of others that might be there if it had been God's will to put them there, nor, consequently, to bring them to our use, unless we come to the causes through the effects and make use of many particular experiments.

Following this, running my mind over all the objects that had ever presented themselves to my senses, I venture to say that I have noticed nothing in them that I could not explain quite readily by the principles I had found. But I must also admit that the power of nature is so ample and so vast, and these principles are so simple and so general, that I hardly notice any particular effect any longer without recognizing at once that it can [65] be deduced from them in several different ways; and my greatest difficulty is usually to find in which of these ways it depends on them.

For this I know no other expedient than to look again for some experiments of such a kind that their outcome would not be the same if the effect has to be explained in one of these ways as if it has to be explained in the other.

For the rest, I have now reached the point where I see, it seems to me, well enough how to go about making most of the experiments that can serve this purpose. But I also see that they are of such a kind, and so numerous, that neither my hands nor

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toutes ; en sorte que, selon que i'auray desormais la commodité d'en faire plus ou moins, i'auanceray aussy plus ou moins en la connoissance de la Nature.

Ce que ie me prometois de faire connoistre, par le traité que i'auois escrit, & d'y monstrer si clairement l'vtilité que le public en peut receuoir, que i'obligerois tous ceux qui desirent en general le bien des hommes, c'est a dire, tous ceux qui sont en effect vertueux, & non point par faux semblant, ny seulement par opinion, tant a me communiquer celles qu'ils ont desia faites, qu'a m'ayder en la recherche de celles qui restent a faire.

Mais i'ay eu, depuis ce tems la, d'autres raisons qui m'ont fait changer d'opinion, & penser que ie deuois veritablement continuër d'escrire toutes les choses que ie iugerois de quelque importance, a mesure que i'en découurirois la verité, & y apporter le mesme soin que si ie les voulois faire imprimer : tant [66] affin d'auoir d'autant plus d'occasion de les bien examiner, comme sans doute on regarde tousiours de plus prés a ce qu'on croit deuoir estre veu par plusieurs, qu'a ce qu'on ne fait que pour soy mesme, & souuent les choses, qui m'ont semblé vrayes, lorsque i'ay commencé a les conceuoir, m'ont parû fausses, lorsque ie les ay voulu mettre sur le papier ;

AT 66 qu'affin de ne perdre aucune occasion de profiter au public, si i'en suis capable, & que, si mes escrits valent quelque chose, ceux qui les auront aprés ma mort, en puissent vser, ainsi qu'il sera le plus a propos ; mais que ie ne deuois aucunement consentir qu'ils fussent publiez pendant ma vie, affin que ny les oppositions & controuerses, ausquelles ils seroient peutestre suiets, ny mesme la reputation telle quelle, qu'ils me pourroient acquerir, ne me donnassent aucune occasion de perdre le tems que i'ay dessein d'employer a m'instruire.

Car, bien que il soit vray que chasque homme est obligé de procurer, autant qu'il est en luy, le bien des autres, & que c'est proprement ne valoir rien que de n'estre vtile a personne, toutefois il est vray aussy que nos soins se doiuent estendre plus loin que le tems present, & qu'il est bon d'omettre les choses qui apporteroient peutestre quelque profit a ceux qui viuent, lorsque c'est a dessein d'en faire d'autres qui en apportent dauantage a nos neueux.

Comme, en effect, ie veux bien qu'on sçache que le peu que i'ay appris iusques icy, n'est presque rien, a

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my income, even if I had a thousand times more than I have, could suffice for all of them. So, according as I have the opportunity from now on to make more or fewer of them, I will also advance more or less in the knowledge of nature.

This is what I hoped to make known through the treatise I had written, and to show in it so clearly the benefit the public could receive from it that I would oblige all those who desire the good of humankind in general—that is, all those who are truly virtuous, and not by false pretense or merely in reputation—both to communicate to me the experiments they have already made and to help me in the search for those that remain to be made.

But since then I have had other reasons that made me change my mind and think that I really ought to go on writing down everything I judged to be of some importance, as I discovered its truth, and to take the same care over it as if I meant to have it printed. I would do this, first, [66] so as to have all the more occasion to examine these things well—for no doubt we always look more closely at what we believe will be seen by many than at what we do only for ourselves, and things that seemed true to me when I first began to conceive them have often looked false when I tried to put them on paper;

and second, so as not to lose any chance of benefiting the public, if I am capable of it, and so that, if my writings are worth anything, those who have them after my death may use them in whatever way is most fitting. But I also thought I ought not on any account to consent to their being published during my lifetime, so that neither the objections and controversies they might provoke, nor even whatever reputation they might earn me, would give me any occasion to lose the time I intend to spend on instructing myself.

For although it is true that everyone is obliged to promote the good of others as far as he can, and that to be useful to no one is really to be worth nothing, it is also true that our concerns ought to reach beyond the present time. It is good to leave aside things that might bring some profit to those now living when we do so in order to do other things that will bring more to our descendants.

And in fact I am glad to have it known that the little I have learned so far is almost nothing com-

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comparaison de ce que i'ignore, & que ie ne desespere pas de pouuoir apprendre ; car c'est quasi le mesme de ceux qui découurent peu a peu la verité dans les [67] sciences, que de ceux qui, commençant a deuenir riches, ont moins de peine a faire de grandes acquisitions, qu'ils n'ont eu auparauant, estant plus pauures, a en faire de beaucoup moindres.

AT 67 Ou bien on peut les comparer aux chefs d'armée, dont les forces ont coustume de croistre a proportion de leurs victoires, & qui ont besoin de plus de conduite, pour se maintenir aprés la perte d'vne bataille, qu'ils n'ont, aprés l'auoir gaignée, a prendre des villes & des prouinces.

Car c'est veritablement donner des batailles, que de tascher a vaincre toutes les difficultez & les erreurs, qui nous empeschent de paruenir a la connoissance de la verité, & c'est en perdre vne, que de receuoir quelque fausse opinion, touchant vne matiere vn peu generale & importante ; il faut, aprés, beaucoup plus d'adresse, pour se remettre au mesme estat qu'on estoit auparauant, qu'il ne faut a faire de grans progrés, lorsqu'on a desia des principes qui sont assurez.

Pour moy, si i'ay cy deuant trouué quelques veritez dans les sciences (& i'espere que les choses qui sont contenuës en ce volume feront iuger que i'en ay trouué quelques vnes), ie puis dire que ce ne sont que des suites & des dependances de cinq ou six principales difficultez que i'ay surmontées, & que ie conte pour autant de batailles où i'ay eu l'heur de mon costé. Mesme ie ne craindray pas de dire, que ie pense n'auoir plus besoin d'en gaigner que deux ou trois autres semblables, pour venir entierement a bout de mes desseins ; et que mon aage n'est point si auancé que, selon le cours ordinaire de la Nature, ie ne puisse encore auoir assez de loysir pour cet effect.

AT 68 Mais ie croy estre d'autant plus obligé a ménager le tems qui me reste, que i'ay plus d'esperance de le pouuoir bien employer ; et i'aurois sans doute plusieurs occasions de le perdre, si ie publiois les fondemens de ma Physique. Car, encore qu'ils soient presque tous si euidens, qu'il ne faut que les entendre pour les croire, & qu'il n'y en ait aucun, dont ie ne pense pouuoir donner des demonstrations, toutefois, a cause qu'il est impossible qu'ils soient accordans auec toutes les diuerses opinions des autres hommes, ie preuoy que ie serois souuent diuerti par les oppositions qu'ils feroient naistre.

On peut dire que ces oppositions seroient vtiles, tant affin de me faire connoistre mes fautes, qu'affin que, si i'auois

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pared with what I do not know and do not despair of being able to learn. For it is much the same with those who gradually discover the truth in the [67] sciences as with those who are beginning to grow rich: they have less trouble making large acquisitions than they had before, when they were poorer, in making much smaller ones.

Or we may compare them to army commanders, whose forces usually grow in proportion to their victories, and who need more skill to hold their ground after losing a battle than they need, after winning one, to take towns and provinces.

For trying to overcome all the difficulties and errors that keep us from reaching knowledge of the truth is truly fighting battles, and accepting some false opinion on a fairly general and important matter is losing one. Afterwards much more skill is needed to get back to where we were before than is needed to make great progress when we already have principles that are secure.

As for me, if I have found any truths in the sciences before now (and I hope the contents of this volume will lead people to judge that I have found some), I can say that they are only the consequences and offshoots of five or six principal difficulties that I have overcome, and that I count as so many battles in which fortune was on my side. I will even venture to say that I think I need to win only two or three more like them to carry out my plans entirely; and that I am not so advanced in years that, in the ordinary course of nature, I may not still have enough time for this.[2]

But I believe I am all the more obliged to be sparing with the time I have left, the more hope I have of being able to use it well; and I would no doubt have many occasions to lose it if I published the foundations of my physics. For although they are almost all so evident that one need only understand them to believe them, and there is none for which I do not think I can give demonstrations, still, since they cannot possibly agree with all the various opinions of other people, I foresee that I would often be distracted by the opposition they would arouse.

It may be said that this opposition would be useful: both to make me aware of my mistakes, and so

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quelque chose de bon, les autres en eussent par ce moyen plus d'intelligence, &, comme plusieurs peuuent plus voir qu'vn homme seul, que commençant des maintenant a s'en seruir, ils m'aydassent aussy de leurs inuentions.

Mais, encore que ie me reconnoisse extremement suiet a faillir, & que ie ne me fie quasi iamais aux premieres pensées qui me vienent, toutefois l'experience que i'ay des obiections qu'on me peut faire, m'empesche d'en esperer aucun profit : car i'ay desia souuent esprouué les iugemens, tant de ceux que i'ay tenus pour mes amis, que de quelques autres a qui ie pensois estre indifferent, & mesme aussy de quelques vns dont ie sçauois que la malignité & l'enuie tascheroit assez a découurir ce que l'affection cacheroit a mes amis ; mais il est rarement arriué qu'on m'ayt obiecté quelque chose que ie n'eusse point du tout preueuë, si ce n'est qu'elle fust [69] fort éloignée de mon suiet ; en sorte que ie n'ay quasi iamais rencontré aucun censeur de mes opinions, qui ne me semblast ou moins rigoureux, ou moins equitable, que moy mesme.

AT 69 Et ie n'ay iamais remarqué non plus, que, par le moyen des disputes qui se pratiquent dans les escholes, on ait découuert aucune verité qu'on ignorast auparauant ; car, pendant que chascun tasche de vaincre, on s'exerce bien plus a faire valoir la vraysemblance, qu'a peser les raisons de part & d'autre ; & ceux qui ont esté long tems bons auocats, ne sont pas pour cela, par aprés, meilleurs iuges.

Pour l'vtilité que les autres receuroient de la communication de mes pensées, elle ne pourroit aussy estre fort grande, d'autant que ie ne les ay point encore conduites si loin, qu'il ne soit besoin d'y aiouster beaucoup de choses, auant que de les appliquer a l'vsage. Et ie pense pouuoir dire, sans vanité, que, s'il y a quelqu'vn qui en soit capable, ce doit estre plutost moy qu'aucun autre : non pas qu'il ne puisse y auoir au monde plusieurs esprits incomparablement meilleurs que le mien ; mais pource qu'on ne sçauroit si bien conceuoir vne chose, & la rendre siene, lorsqu'on l'apprent de quelque autre, que lorsqu'on l'inuente soy mesme.

Ce qui est si veritable, en cete matiere, que, bien que i'aye souuent expliqué quelques vnes de mes opinions a des personnes de tres bon esprit, & qui, pendant que ie leur parlois, sembloient les entendre fort distinctement,

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that, if I had anything good, others would understand it better by this means; and also—since many people can see more than one person alone—so that, beginning to make use of it right away, they would help me with their own discoveries too.

But although I recognize that I am extremely liable to error, and almost never trust the first thoughts that come to me, my experience of the objections that can be made to me keeps me from hoping for any profit from them. For I have often already put to the test the judgments of those I took to be my friends, of some others to whom I thought I was indifferent, and even of some whose malice and envy, I knew, would try hard enough to uncover what affection would hide from my friends. Yet it has rarely happened that anyone raised an objection I had not foreseen at all, unless it was [69] far removed from my subject. So I have almost never met any critic of my opinions who did not seem to me either less rigorous or less fair than I am myself.

Nor have I ever observed that the disputations practiced in the schools have brought to light any truth that was unknown before. For while each side tries to win, they work far harder at making the most of what is plausible than at weighing the arguments on either side; and those who have long been good advocates do not, for all that, become better judges afterwards.[3]

As for the benefit others would get from my communicating my thoughts, it could not be very great either, since I have not yet taken them so far that much would not need to be added before they could be put to use. And I think I can say without vanity that if anyone is capable of doing this, it must be I rather than anyone else—not that there may not be many minds in the world incomparably better than mine, but because one cannot conceive a thing so well, and make it one's own, when one learns it from someone else as when one discovers it oneself.

This is so true in this matter that, although I have often explained some of my opinions to very intelligent people, who seemed to understand them

2 Descartes was forty-one in 1637.
3 Formal debates on set questions were a standard exercise in the universities, where scholastic philosophy was taught.

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toutefois, lorsqu'ils les ont redites, i'ay remarqué qu'ils les ont changées presque tousiours en telle sorte que ie ne les pouuois plus auouër pour mienes. A l'occasion de quoy ie suis [70] bien ayse de prier icy nos neueux, de ne croire iamais que les choses qu'on leur dira vienent de moy, lorsque ie ne les auray point moy mesme diuulguées.

AT 70 Et ie ne m'estonne aucunement des extrauagances qu'on attribue a tous ces anciens Philosophes, dont nous n'auons point les escrits, ny ne iuge pas, pour cela, que leurs pensées ayent esté fort deraisonnables, veu qu'ils estoient des meilleurs esprits de leurs tems, mais seulement qu'on nous les a mal rapportées. Comme on voit aussy que presque iamais il n'est arriué qu'aucun de leurs sectateurs les ait surpassez ; et ie m'assure que les plus passionnez de ceux qui suiuent maintenant Aristote, se croyroient hureux, s'ils auoient autant de connoissance de la Nature qu'il en a eu, encore mesme que ce fust a condition qu'ils n'en auroient iamais dauantage.

Ils sont comme le lierre, qui ne tend point a monter plus haut que les arbres qui le soutienent, & mesme souuent qui redescend, aprés qu'il est paruenu iusques a leur faiste ; car il me semble aussy que ceux la redescendent, c'est-a-dire, se rendent en quelque façon moins sçauans que s'ils s'abstenoient d'estudier, lesquels, non contens de sçauoir tout ce qui est intelligiblement expliqué dans leur autheur, veulent, outre cela, y trouuer la solution de plusieurs difficultez, dont il ne dit rien & ausquelles il n'a peutestre iamais pensé.

Toutefois, leur façon de philosopher est fort commode, pour ceux qui n'ont que des esprits fort mediocres ; car l'obscurité des distinctions & des principes dont ils se seruent, est cause qu'ils peuuent parler de toutes choses aussy hardiment que s'ils les sçauoient, & soustenir tout ce qu'ils [71] en disent contre les plus subtils & les plus habiles, sans qu'on ait moyen de les conuaincre.

AT 71 En quoy ils me semblent pareils a vn aueugle, qui, pour se battre sans desauantage contre vn qui voit, l'auroit fait venir dans le fonds de quelque caue fort obscure ; et ie puis dire que ceux cy ont interest que ie m'abstiene de publier les principes de la Philosophie dont ie me sers : car estans tres simples & tres euidens, comme ils sont, ie ferois quasi le mesme, en les publiant, que si i'ouurois quelques fenestres, & faisois entrer du iour dans cete caue, ou ils sont descendus pour se battre.

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quite distinctly while I was speaking to them, I have noticed that when they repeated them they almost always changed them so much that I could no longer acknowledge them as mine. For this reason I am [70] glad to take the opportunity here to ask our descendants never to believe that things they are told come from me, unless I have published them myself.

And I am not at all surprised at the extravagant views attributed to all those ancient philosophers whose writings we do not have. Nor do I conclude from this that their thoughts were very unreasonable, since they were among the best minds of their times; only that they have been badly reported to us. So too we see that almost never has any of their followers surpassed them; and I am sure that the most ardent of those who now follow Aristotle would think themselves fortunate if they had as much knowledge of nature as he had, even on condition that they would never have any more.

They are like ivy, which never tries to climb higher than the trees that hold it up, and often even comes back down after reaching their tops. For it seems to me that those people too come back down—that is, somehow make themselves less learned than if they gave up studying—who, not content to know everything that is intelligibly explained in their author, want in addition to find in him the solution to many difficulties about which he says nothing, and which perhaps he never thought of.

Still, their way of philosophizing is very convenient for those who have only quite mediocre minds. For the obscurity of the distinctions and principles they use allows them to speak of everything as boldly as if they knew it, and to defend everything they [71] say about it against the most subtle and skillful, without anyone having a way to prove them wrong.

In this they seem to me like a blind man who, in order to fight a sighted man without disadvantage, has brought him down into the depths of some very dark cellar. And I can say that such people have an interest in my refraining from publishing the principles of the philosophy I use. For since they are very simple and very evident, as they are, publishing them would be almost like opening

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Mais mesme les meilleurs esprits n'ont pas occasion de souhaiter de les connoistre : car, s'ils veulent sçauoir parler de toutes choses, & acquerir la reputation d'estre doctes, ils y paruiendront plus aysement en se contentant de la vraysemblance, qui peut estre trouuée sans grande peine en toutes sortes de matieres, qu'en cherchant la verité, qui ne se découure que peu a peu en quelques vnes, & qui, lorsqu'il est question de parler des autres, oblige a confesser franchement qu'on les ignore.

Que s'ils preferent la connoissance de quelque peu de veritez a la vanité de paroistre n'ignorer rien, comme sans doute elle est bien preferable, & qu'il vueillent suiure vn dessein semblable au mien, ils n'ont pas besoin, pour cela, que ie leur die rien dauantage que ce que i'ay desia dit en ce discours. Car, s'ils sont capables de passer plus outre que ie n'ay fait, ils le seront aussy, a plus forte raison, de trouuer d'eux mesmes tout ce que ie pense auoir trouué.

D'autant que, n'ayant iamais rien examiné que par ordre, il est certain que ce qui me reste encore a découurir, est [72] de soy plus difficile & plus caché, que ce que i'ay pû cy deuant rencontrer, & ils auroient bien moins de plaisir a l'apprendre de moy que d'eux mesmes ; outre que l'habitude qu'ils acquerront, en cherchant premierement des choses faciles, & passant peu a peu par degrez a d'autres plus difficiles, leur seruira plus que toutes mes instructions ne sçauroient faire.

AT 72 Comme, pour moy, ie me persuade que, si on m'eust enseigné, dés ma ieunesse, toutes les veritez dont i'ay cherché depuis les demonstrations, & que ie n'eusse eu aucune peine a les apprendre, ie n'en aurois peutestre iamais sceu aucunes autres, & du moins que iamais ie n'aurois acquis l'habitude & la facilité, que ie pense auoir, d'en trouuer tousiours de nouuelles, a mesure que ie m'applique a les chercher. Et en vn mot, s'il y a au monde quelque ouurage, qui ne puisse estre si bien acheué par aucun autre que par le mesme qui l'a commencé, c'est celuy auquel ie trauaille.

Il est vray que, pour ce qui est des experiences qui peuuent y seruir, vn homme seul ne sçauroit suffire a les faire toutes ; mais il n'y sçauroit aussy employer vtilement d'autres mains que les sienes, sinon celles des artisans, ou telles gens qu'il pourroit payer, & a qui

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some windows and letting daylight into the cellar where they have gone down to fight.

But even the best minds have no reason to wish to know them. For if they want to be able to talk about everything and gain a reputation for learning, they will manage it more easily by contenting themselves with plausibility, which can be found without much trouble in every kind of subject, than by seeking the truth, which is discovered only little by little in a few subjects, and which, when it comes to speaking of the others, obliges one to admit frankly that one does not know them.

But if they prefer knowing a few truths to the vanity of appearing ignorant of nothing—as no doubt is much preferable—and wish to follow a plan like mine, they do not need me to tell them anything more than I have already said in this discourse. For if they are capable of going further than I have, they will be all the more capable of finding by themselves everything I think I have found.

Since I have never examined anything except in order, it is certain that what remains for me to discover is [72] in itself more difficult and more hidden than what I have been able to come upon so far; and they would take much less pleasure in learning it from me than by themselves. Besides, the habit they will acquire by seeking easy things first, and passing little by little, by degrees, to others more difficult, will serve them better than all my instructions could.

For my own part, I am convinced that if I had been taught, from my youth, all the truths whose demonstrations I have since sought, and had had no trouble learning them, I would perhaps never have known any others, and at least I would never have acquired the habit and facility I think I have of always finding new ones as I apply myself to looking for them. In a word, if there is any work in the world that cannot be finished as well by anyone else as by the one who began it, it is the one I am working on.

It is true that, as for the experiments that may serve it, one man alone could not suffice to perform them all. But neither could he usefully employ any hands but his own, except those of craftsmen, or such people as he could pay, whom the

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l'esperance du gain, qui est vn moyen tres efficace, feroit faire exactement toutes les choses qu'il leur prescriroit.

Car, pour les volontaires, qui, par curiosité ou desir d'apprendre, s'offriroient peutestre de luy ayder, outre qu'ils ont pour l'ordinaire plus de promesses que d'effect, & qu'ils ne font que de belles propositions dont aucune iamais ne reüssit, ils [73] voudroient infalliblement estre payez par l'explication de quelques difficultez, ou du moins par des complimens & des entretiens inutiles, qui ne luy sçauroient couster si peu de son tems qu'il n'y perdist.

AT 73 Et pour les experiences que les autres ont desia faites, quand bien mesme ils les luy voudroient communiquer, ce que ceux qui les nomment des secrets ne feroient iamais, elles sont, pour la pluspart, composées de tant de circonstances, ou d'ingrediens superflus, qu'il luy seroit tres malaysé d'en déchiffrer la verité ; outre qu'il les trouueroit presque toutes si mal expliquées, ou mesme si fausses, a cause que ceux qui les ont faites se sont efforcez de les faire paroistre conformes a leurs principes, que, s'il y en auoit quelques vnes qui luy seruissent, elles ne pourroient derechef valoir le tems qu'il luy faudroit employer a les choisir.

De façon que, s'il y auoit au monde quelqu'vn, qu'on sceust assurement estre capable de trouuer les plus grandes choses, & les plus vtiles au public qui puissent estre, & que, pour cete cause, les autres hommes s'efforçassent, par tous moyens, de l'ayder a venir a bout de ses desseins, ie ne voy pas qu'ils peussent autre chose pour luy, sinon fournir aux frais des experiences dont il auroit besoin, & du reste empescher que son loisir ne luy fust osté par l'importunité de personne.

Mais, outre que ie ne presume pas tant de moy mesme, que de vouloir rien promettre d'extraordinaire, ny ne me repais point de pensées si vaines, que de m'imaginer que le public se doiue beaucoup interesser en mes desseins, ie n'ay pas aussy l'ame si basse, que ie voulusse accepter de qui que ce fust [74] aucune faueur, qu'on pust croyre que ie n'aurois pas meritée.

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hope of gain—a very effective means—would lead to do exactly everything he told them.

For as for volunteers, who might offer to help him out of curiosity or a desire to learn: besides the fact that they usually promise more than they deliver, and make only fine proposals of which none ever comes to anything, they [73] would infallibly want to be paid by having some difficulties explained to them, or at least in compliments and useless conversations, which could not cost him so little of his time that he would not lose by it.

And as for experiments others have already performed, even if they were willing to share them with him—which those who call them secrets would never do—most of them involve so many circumstances or superfluous ingredients that it would be very hard for him to make out the truth in them. Besides, he would find almost all of them so badly explained, or even so false—because those who performed them strove to make them appear consistent with their principles—that, even if there were some that were of use to him, they could not in turn be worth the time he would need to spend picking them out.

So if there were someone in the world who was known for certain to be capable of finding the greatest things, and the most useful to the public, that there could be, and if for that reason other people strove by every means to help him carry out his plans, I do not see that they could do anything for him except meet the costs of the experiments he needed, and for the rest keep his leisure from being taken from him by anyone's importunity.

But besides the fact that I do not presume so much of myself as to want to promise anything extraordinary, nor feed on such vain thoughts as to imagine that the public ought to take a great interest in my plans, neither is my soul so base that I would be willing to accept from anyone at all [74] any favor that people might think I had not deserved.

WHY THIS BOOK APPEARS

Descartes explains why he publishes these essays after all and invites readers to send objections.

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Toutes ces considerations iointes ensemble furent cause, il y a trois ans, que ie ne voulu point diuulguer le traité que i'auois entre les mains, & mesme que ie fus en resolution de n'en faire voir aucun autre, pendant ma vie, qui fust si general, ny duquel on pûst entendre les fondemens de ma Physique. Mais il y a eu depuis derechef deux autres raisons, qui m'ont obligé a mettre icy quelques essais particuliers, & a rendre au public quelque compte de mes actions & de mes desseins.

La premiere est que, si i'y manquois, plusieurs, qui ont sceu l'intention que i'auois euë cy deuant de faire imprimer quelques escrits, pourroient s'imaginer que les causes pour lesquelles ie m'en abstiens, seroient plus a mon desauantage qu'elles ne sont.

Car, bien que ie n'ayme pas la gloire par excés, ou mesme, si ie l'ose dire, que ie la haïsse, en tant que ie la iuge contraire au repos, lequel i'estime sur toutes choses, toutefois aussy ie n'ay iamais tasché de cacher mes actions comme des crimes, ny n'ay vsé de beaucoup de precautions pour estre inconnu ; tant a cause que i'eusse creu me faire tort, qu'a cause que cela m'auroit donné quelque espece d'inquietude, qui eust derechef esté contraire au parfait repos d'esprit que ie cherche.

Et pourceque, m'estant tousiours ainsi tenu indifferent entre le soin d'estre connu ou ne l'estre pas, ie n'ay pû empescher que ie n'acquisse quelque sorte de reputation, i'ay pensé que ie deuois faire mon mieux pour m'exempter au moins de l'auoir mauuaise.

L'autre raison, qui m'a obligé a escrire [75] cecy, est que, voyant tous les iours de plus en plus le retardement que souffre le dessein que i'ay de m'instruire, a cause d'vne infinité d'experiences dont i'ay besoin, & qu'il est impossible que ie face sans l'ayde d'autruy, bien que ie ne me flatte pas tant que d'esperer que le public prene grande part en mes interests, toutefois ie ne veux pas aussy me defaillir tant a moy-mesme, que de donner suiet a ceux qui me suruiuront, de me reprocher quelque iour, que i'eusse pû leur laisser plusieurs choses beaucoup meilleures que ie n'auray fait, si ie n'eusse point trop negligé de leur faire entendre en quoy ils pouuoient contribuer a mes desseins.

AT 75 Et i'ay pensé qu'il m'estoit aysé de choisir quelques matieres, qui, sans estre suietes a beaucoup de controuerses, ny m'obliger a declarer dauantage de mes principes que ie ne desire, ne lairroient pas de faire voir

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All these considerations taken together were the reason why, three years ago, I did not want to make public the treatise I had in hand, and even resolved not to let any other be seen during my lifetime that was so general, or from which the foundations of my physics could be understood. But since then two further reasons have obliged me to include some particular essays here, and to give the public some account of my actions and my plans.

The first is that, if I failed to do so, many people who knew of my earlier intention to have some writings printed might imagine that my reasons for refraining were more to my discredit than they are.

For although I do not love glory excessively—or even, if I dare say so, I hate it, insofar as I judge it contrary to peace, which I value above all things—still I have never tried to hide my actions as if they were crimes, nor taken many precautions to remain unknown. This is both because I would have thought I was wronging myself, and because it would have given me a kind of anxiety, which again would have been contrary to the perfect peace of mind I am seeking.

And since, having always kept myself indifferent in this way between caring to be known and caring not to be, I have not been able to prevent my acquiring some kind of reputation, I thought I ought to do my best at least to spare myself a bad one.

The other reason that has obliged me to write [75] this is that I see more clearly every day the delay that my plan of instructing myself is suffering, because of the countless experiments I need, which I cannot possibly perform without others' help. And although I do not flatter myself so far as to hope that the public will take a great share in my interests, still I do not want to fail myself so badly as to give those who outlive me grounds to reproach me some day that I could have left them many things far better than those I will have left, if I had not been too negligent in letting them know how they could contribute to my plans.

And I thought it would be easy for me to choose some subjects which, without being open to much controversy or obliging me to reveal more of my principles than I wish, would nevertheless show

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assez clairement ce que ie puis, ou ne puis pas, dans les sciences.

En quoy ie ne sçaurois dire si i'ay reussi, & ie ne veux point preuenir les iugemens de personne, en parlant moy-mesme de mes escrits ; mais ie seray bien ayse qu'on les examine, & affin qu'on en ait d'autant plus d'occasion, ie supplie tous ceux qui auront quelques obiections a y faire, de prendre la peine de les enuoyer a mon libraire, par lequel en estant auerti, ie tascheray d'y ioindre ma response en mesme tems ; & par ce moyen les lecteurs, voyant ensemble l'vn & l'autre, iugeront d'autant plus aysement de la verité.

Car ie ne promets pas d'y faire iamais de longues responses, mais seulement d'auouër mes fautes fort franchement, si ie les connois, ou [76] bien, si ie ne les puis aperceuoir, de dire simplement ce que ie croyray estre requis, pour la defence des choses que i'ay escrites, sans y adiouster l'explication d'aucune nouuelle matiere, affin de ne me pas engager sans fin de l'vne en l'autre.

AT 76 Que si quelques vnes de celles dont i'ay parlé, au commencement de la Dioptrique & des Meteores, chocquent d'abord, a cause que ie les nomme des suppositions, & que ie ne semble pas auoir enuie de les prouuer, qu'on ait la patience de lire le tout auec attention, & i'espere qu'on s'en trouuera satisfait. Car il me semble que les raisons s'y entresuiuent en telle sorte que, comme les dernieres sont demonstrées par les premieres, qui sont leurs causes, ces premieres le sont reciproquement par les dernieres, qui sont leurs effets.

Et on ne doit pas imaginer que ie commette en cecy la faute que les Logiciens nomment vn cercle ; car l'experience rendant la plus part de ces effets tres certains, les causes dont ie les deduits ne seruent pas tant a les prouuer qu'a les expliquer ; mais, tout au contraire, ce sont elles qui sont prouuées par eux.

Et ie ne les ay nommées des suppositions, qu'affin qu'on sçache que ie pense les pouuoir deduire de ces premieres veritez que i'ay cy dessus expliquées, mais que i'ay voulu expressement ne le pas faire, pour empescher que certains esprits, qui s'imaginent qu'ils sçauent en vn iour tout ce qu'vn autre a pensé en vingt années, si tost qu'il leur en a seulement dit deux ou trois mots, & qui sont d'autant plus suiets a faillir, & moins capables de la verité, qu'ils sont plus penetrans & plus vifs, ne puissent

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clearly enough what I can and cannot do in the sciences.

Whether I have succeeded in this I cannot say, and I do not want to forestall anyone's judgment by speaking of my writings myself. But I will be very glad to have them examined; and so that there may be all the more occasion for this, I ask all those who have any objections to make to take the trouble of sending them to my publisher. Once he lets me know of them, I will try to attach my reply to them at the same time; and in this way readers, seeing both together, will judge the truth all the more easily.[4]

For I do not promise ever to give long replies, but only to admit my mistakes very frankly if I recognize them, or else, [76] if I cannot see them, to say simply what I believe is required to defend what I have written, without adding the explanation of any new subject, so as not to get drawn endlessly from one into another.

If some of the things I spoke of at the beginning of the *Optics* and the *Meteorology* are off-putting at first, because I call them suppositions and do not seem inclined to prove them, let the reader have the patience to read the whole with attention, and I hope he will be satisfied. For it seems to me that the arguments there follow one another in such a way that, just as the last are demonstrated by the first, which are their causes, so the first are in turn demonstrated by the last, which are their effects.

And no one should imagine that I am committing here the fault that logicians call a circle. For since experience makes most of these effects very certain, the causes from which I deduce them serve not so much to prove them as to explain them; on the contrary, it is the causes that are proved by the effects.

And I have called them suppositions only so that people may know that I think I can deduce them from the primary truths I explained above, but that I have deliberately chosen not to do so. I wanted to prevent certain minds—who imagine that they know in a day everything another person has thought over twenty years, as soon as he has said just two or three words to them about it, and who are all the more liable to err, and the less

4 The volume was printed at Leiden in 1637 by the bookseller-publisher Jan Maire.

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	de [77] la prendre occasion de bastir quelque Philosophie extrauagante sur ce qu'ils croyront estre mes principes, & qu'on m'en attribue la faute.	capable of the truth, the more penetrating and quick they are—from [77] seizing the occasion to build some extravagant philosophy on what they take to be my principles, and from having the blame for it laid on me.
AT 77	Car, pour les opinions qui sont toutes mienes, ie ne les excuse point comme nouuelles, d'autant que, si on en considere bien les raisons, ie m'assure qu'on les trouuera si simples, & si conformes au sens commun, qu'elles sembleront moins extraordinaires, & moins estranges, qu'aucunes autres qu'on puisse auoir sur mesmes suiets. Et ie ne me vante point aussy d'estre le premier Inuenteur d'aucunes, mais bien, que ie ne les ay iamais receuës, ny pource qu'elles auoient esté dites par d'autres, ny pource qu'elles ne l'auoient point esté, mais seulement pource que la raison me les a persuadées.	As for the opinions that are wholly my own, I make no apology for their being new. For if their reasons are properly considered, I am sure they will be found so simple and so in keeping with common sense that they will seem less extraordinary and less strange than any others one might hold on the same subjects. Nor do I boast of being the first discoverer of any of them; I say only that I have never accepted them either because others had said them or because they had not, but solely because reason persuaded me of them.
	Que si les artisans ne peuuent si tost executer l'inuention qui est expliquée en la Dioptrique, ie ne croy pas qu'on puisse dire, pour cela, qu'elle soit mauuaise : car, d'autant qu'il faut de l'adresse & de l'habitude, pour faire & pour aiuster les machines que i'ay descrites, sans qu'il y manque aucune circonstance, ie ne m'estonnerois pas moins, s'ils rencontroient du premier coup, que si quelqu'vn pouuoit apprendre, en vn iour, a iouer du luth excellemment, par cela seul qu'on luy auroit donné de la tablature qui seroit bonne.	If craftsmen cannot immediately carry out the invention explained in the *Optics*, I do not think anyone can say for that reason that it is bad. For since skill and practice are needed to make and adjust the machines I have described without missing any detail, I would be no less surprised if they succeeded on the first try than if someone could learn to play the lute excellently in a day, simply because he had been given good tablature.[5]

WRITING IN FRENCH

Descartes explains why he writes in French and resolves to devote his remaining time to medicine.

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	Et si i'escris en François, qui est la langue de mon païs, plutost qu'en Latin, qui est celle de mes Precepteurs, c'est a cause que i'espere que ceux qui ne se seruent que de leur raison naturelle toute pure, iugeront mieux de mes opinions, que ceux qui ne croyent qu'aux liures anciens. Et pour ceux qui ioignent le bon sens auec l'estude, lesquels seuls ie souhaite pour [78] mes iuges, ils ne seront point, ie m'asseure, si partiaux pour le Latin, qu'ils refusent d'entendre mes raisons, pourceque ie les explique en langue vulgaire.	And if I write in French, the language of my country, rather than in Latin, the language of my teachers, it is because I hope that those who use only their pure natural reason will judge my opinions better than those who believe only in ancient books. And as for those who combine good sense with study, whom alone I wish to have as [78] my judges, they will not, I am sure, be so partial to Latin as to refuse to hear my reasons because I explain them in the common tongue.
AT 78	Au reste, ie ne veux point parler icy, en particulier, des progrés que i'ay esperance de faire a l'auenir dans les sciences, ny m'engager enuers le public d'aucune promesse, que ie ne sois pas assuré d'accomplir ; mais ie	For the rest, I do not want to speak here in detail of the progress I hope to make in the sciences in future, or to bind myself to the public by any promise I am not sure of fulfilling. I will say only that I

5 The invention is a machine for grinding lenses to a hyperbolic shape, described at the end of the *Optics*. Tablature is the written notation used for lute music.

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diray seulement que i'ay resolu de n'employer le tems qui me reste a viure, a autre chose qu'a tascher d'acquerir quelque connoissance de la Nature, qui soit telle qu'on en puisse tirer des regles pour la Medecine, plus assurées que celles qu'on a euës iusques a present ; et que mon inclination m'esloigne si fort de toute sorte d'autres desseins, principalement de ceux qui ne sçauroient estre vtiles aux vns qu'en nuisant aux autres, que, si quelques occasions me contraignoient de m'y employer, ie ne croy point que ie fusse capable d'y reussir.

De quoy ie fais icy vne declaration, que ie sçay bien ne pouuoir seruir a me rendre considerable dans le monde, mais aussy n'ay ie aucunement enuie de l'estre ; et ie me tiendray tousiours plus obligé a ceux, par la faueur desquels ie iouiray sans empeschement de mon loisir, que ie ne serois a ceux qui m'offriroient les plus honorables emplois de la terre.

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have resolved to spend the time I have left to live on nothing but trying to acquire some knowledge of nature from which we can derive rules for medicine more reliable than those we have had until now; and that my inclination turns me so strongly away from every other kind of plan, especially those that could be useful to some only by harming others, that if circumstances forced me to take them up, I do not believe I would be capable of succeeding at them.

I make this declaration here knowing well that it cannot serve to make me a person of consequence in the world; but then I have no wish at all to be one. And I will always hold myself more obliged to those by whose favor I may enjoy my leisure without hindrance than I would be to those who offered me the most honorable positions on earth.