CHAPTER FIVE
THE BIRTH OF THE MODERN WORLD

With the unknown, one is confronted with danger, discomfort and worry; the first instinct is to abolish these painful sensations. First principle: any explanation is better than none...The search for causes is thus conditioned by and excited by the feeling of fear. The question: “why?” is not pursued for its own sake but to find a certain kind of answer—an answer that is pacifying, tranquilizing and soothing.

Nietzsche, The Twilight of the Idols

The Scientific Revolution: A Two-edged Sword.

An obvious example of this is the solid-state computer. It is a child of brilliant research in quantum physics, conducted during the late 1940s, yoked to equally brilliant work that had been done during World War II by Allan Turing, who led the team that cracked the German cipher system, one called Enigma. Subsequent work done in Silicon Valley has made it possible for us to sit in front of a “laptop” and send and receive messages, pictures, both “stills” and television programs. (I have taken some shortcuts here, in order to remain “on target.”

But at the same time this invention makes it possible for all our e-mails and phone calls to be collected, archived and robotically monitored. And it is happening as I write these words. Why do they do this to us? Because they can! That’s why. And there’s the rub.

Now that we have started to collect two-edged examples, there is no point in my adding to the list, since your fertile imaginations will add more. You have doubtless watched Mickey Mouse, in his starring role as The Sorcerer’s Apprentice, in Walt Disney’s Fantasia. Johann Wolfgang von Goethe wrote that story, I believe as a “warm-up” for his magnum opus: “Faust.” The original Faust legend, you will recall, is about a scholar who made a deal with the Devil, by which he would get whatever he wanted—in exchange for his soul. The story dates back to the very beginning of the Scientific Revolution; Christopher Marlowe, in a flash of genius, wrote The Tragical History of Doctor Faustus around the year 1590. He must have had a premonition, for it is the Grand Myth for our time, even more than Mary Wallstonecraft’s Frankenstein.

The Birth Of Science—The Conventional Wisdom

Below is the standard myth concerning the conditions in Europe around the year 1600, at the eve of the era of Descartes and Galileo, and the first birth pangs of Modernity--the standard fare in texts on the history of science—“the Gospel.”
(1) By that time most of Europe, especially the Protestant countries in the North, had attained new heights of prosperity and comfort, due to the growth of trade resulting from improvements in navigation and world exploration. And it was this prosperity that inevitably gave people more time to think and write.
(2) The invention of movable type had made possible the rise of a secular culture, whereby lay scholars, reading and thinking for themselves, no longer recognized the Church’s right to tell them what to
believe, and began to judge all doctrines by their inherent plausibility. Turning away from medieval scholasticism, thinkers of the 17th century developed new ideas based upon observation and experience. It was from this that freedom of expression naturally evolved.

(3) It was due to this 17th century insistence upon rationality, together with its rejection of tradition, that European life was reshaped. What Galileo had accomplished for science, Descartes accomplished for philosophy, freeing it from the tutelage of theology.

In this way we were taught that scientific activity is a natural product of the human intellect, in much the same way that an apple is the product of an apple tree; and that once material prosperity had been assured, once the tyranny of the Church had been overthrown, and once literacy had become widespread, there would be no further obstacles to the advancement of Science, or of Humanity.

Now then, how are we to treat this story? Surprisingly the answer is that we can look upon it as smugly self-congratulatory and mostly false--for the following reasons.

**What do we mean by Modernity?**

One of the themes of this book is the connection between the Scientific Revolution of the 17th century and the ongoing predicament that haunts us today, as inmates of the Modern World. The predicament? It is this: *The Modern World is a Grand Experiment; and either its failure or its success will be a disaster for us.* The word “Modern,” appears to have acquired powerful, mythological implications; and in the context of this book it has the following meaning:

(1) According to our Cultural Myth, the Scientific Revolution has given humankind the power to understand and predict, and to manipulate and control Nature.

(2) As a result of this manipulation and control, it has already become possible to lengthen the lives of some of us—the fortunate few, by freeing us, to some extent from “the ills the flesh is heir to”, e.g., hunger, disease, cold, heat, drudgery, etc.

(3) The Scientific Revolution, with an increase in knowledge and control, did not happen all at once, however; the increase in power was gradual but cumulative. After a time, this improvement in the lives of some Europeans became noticeable, and acquired the name: “Progress”, which in turn became conflated with the general Progress of the human race as a whole, (whatever that may mean).

(4) It is this cumulative nature of the technology arising from the Scientific Revolution (as predicted by Francis Bacon), that has resulted in countless situations where today’s devices and techniques are held to be superior to those of yesterday. It is in this sense that we use the word “Modern”: “state of the art”, up-to-date. Thus in my youth we were told that “today is better than yesterday,” and that “tomorrow will be better yet.” (In my youth, people took this as a kind of Divine Revelation).

(5) The changes brought about by Modern life have been those associated with vast urban complexes: the megacities, which have come to house over one-third of the world’s human population. A glance at any satellite photo of the earth taken at night is sufficient to convince one of the truth of this. Thus the mythic structure of Modern Civilization implies:

• Our urban destiny,
• supported at all times by a high degree of technological virtuosity,
• requiring the importation of vast quantities of food and energy at the expense of the rest of the world— the growing domestication of the world, the taming of Hostile Nature, and
• Great social complexity, requiring in turn equally complex, (and increasing) social controls. Visualize humans as self-domesticating, self-institutionalizing animals!

(6) Modern Civilization and Science are deeply interwoven; the fate of the one is inextricably bound up with the fate of the other. Modern institutions are assumed to be more rational than previous ones, which are presumed to have been ridden with irrational prejudices and superstitions.
Moreover, this result is inevitable; so it is insane to oppose it, and therefore there is no point in giving the matter any further examination.

But at the same time of course, any program having such far-reaching and irreversible consequences as does Modern Civilization deserves the very best thought and scrutiny that we can apply. After all, habit and awareness are sworn enemies.

And it is for this reason that it is imperative for us to understand the circumstances attending the beginnings of the Scientific Revolution: the Birth of the Modern World, for there is much that is concealed behind the facade of the story line.

The Coming Of The Little Ice Age⁴

We recall that already in the fourteenth century the world of Medieval Christendom was gradually starting to unravel. Historians list a number of factors, but the distinctions made between Cause and Effect are usually inappropriate in a regime as interconnected and non-linear as the world ecosystem—with the possible exception of just one factor: the pressure of population upon resources. For in this case the combined effect of over-population, the parasitic³ growth of urban civilization and a steady worsening of the climate, combined to put a crushing burden upon the human economy. Despite astonishing advances in human mechanical inventiveness, the land-mass of Europe could no longer support its human population. We have seen that by early in the 14th century all of the ecological niches had been filled, and combined with the falling temperatures, “the squeeze was on.” Matters grew steadily worse, for Nature seemed to have gone over to the enemy camp. At the time of The Little Ice Age of the 17th century, the river Thames was frozen to such a depth that oxen were roasted whole over bonfires built upon the ice at London. In marginal areas from 1615 on, there was a steady fall in grain yields as a result of a merciless succession of cool, wet summers, so that during that period entire villages had to be abandoned, swelling the human tide that poured into the plague-ridden cities. English society was approaching a state of collapse. At the time the poet John Donne expressed it thus:⁵

And now the springs and summers which we see,
Like sonses of women after fifty be.
And new philosophy calls all in doubt,
The element of fire is quite put out;
The sun is lost and th’earth, and no man’s wit
Can well direct him where to looke for it.
And freely men confesse, that this world’s spent,
When in the Planets, and the Firmament
They seek so many new; they see that this
Is crumbled out again to his Atomis.
’Tis all in peeces, all cohaerence gone;
All just supply, and all Relation:
Prince, Subject, Father, Sonne, are things forgot,
For every man alone thinkes he hath got
To be a Phoenix, and that there can bee
Nonne of that kinde, of which hee is, but hee.
(Anatomy of the World-- lines 203-218)
At that time many of the English seriously considered the end of the world to be at hand; and a year had even been selected for this event: 1657. The religious conflicts, the deteriorated climate, and the Copernican displacement of the earth outward from the center of the solar system: all of this pointed to an early end—Judgment Day was coming.

Earlier, during the 16th century, Europe, its population having been reduced by the Black Plague, and its capital holdings having increased by the tons of gold and silver plundered from Spain’s South American colonies, had been able to enjoy a brief period of prosperity, a reprieve from the general nastiness. This short respite, however, was abruptly cancelled at the beginning of the 17th century; and from the year 1618 forward, Europe plunged into a state of general crisis, similar to the terror that haunts Iraq and Afghanistan, but extending over a much larger territory.

This how it happened: After the Reformation, Europe had continued its steady downward spiral into a state of war and chaos, a condition briefly alleviated in 1555 with the signing of the Treaty of Augsburg, which stipulated that the religion of the people of a state would have to be that of its ruler. This arrangement turned out to be a poor one, even in a place such as Germany, where the individual states were small in comparison to the size of the region that was home to the German nation; for it still produced large displacements of people, accompanied by a great deal of human misery. But in other nations the German solution was not even remotely workable, since there was no place for people to go. This fact accounts for the great attention that was paid to the French experiment, and to its highly respected creator, Henri of Navarre, King of France, which was the most powerful nation on the continent. The future of Europe lay in the balance, and therein lay the significance of his murder.

What effect did the assassination of Henri IV have on the situation as it stood in Continental Europe? Across the Rhine, the German Empire, a patchwork of states and principalities stretching from the Netherlands to Bohemia, and from Bavaria to the Baltic, had become a powder keg. This huge land was ruled by an emperor who had been, in turn, chosen by a committee made up of seven electors. Some parts of the Empire were Protestant, and some were Catholic. There were four Catholic electors and three Protestant ones, (a piece of gerrymandering engineered earlier by the Catholic Church). The most powerful of these politicians was the Duke Of Austria, a Catholic, who was a close cousin of the King Of Spain, both of them members of the Hapsburg family. A shift of one elector from the Catholic side to the Protestant side would be intolerable from the point of view of the Duke of Austria, but in the year 1618, that is exactly what took place. And with the King Of France out of the way, there was nothing to stop the two cousins from using this as a pretext to reassert Hapsburg power over Central Europe, since the heir to the French Throne at that time was but a sickly child. This, then, was how the Thirty Years’ War broke out. In 1648, by the time the hostilities had finally subsided, 37 percent of the population of Germany had met violent deaths, and the farms and villages of Germany and Bohemia lay in ruins.

In addition, England fell into a state of civil war in the year 1640, remaining in a state of chaos (not all bad) for nearly ten years. At the end of that time, parliamentary rule was established, the king beheaded, (a good start), and a few tentative steps made in the direction of 1787, and the world of Madison and Jefferson. The reason for all this slaughter? It was the long, slow disintegration of the feudal structure of the Middle Ages.
If the Received View is Not the Correct One, What Then, Was the Actual Truth About the Early 17th Century?

• The early 17th century was really a time of major financial disaster, brought about by war, depression, and bad climatic conditions.
• Religious intolerance was at its worst at that time. France had just emerged from a period of bloody religious war, which had lasted for 36 years. And the 30-years’ war in Europe was mostly a result of religious fanaticism.
• When we compare the literary figures of the 17th century with those of the previous one, it can be seen that the horizons of the imagination had become severely contracted. The 16th century was the century of François Rabelais, Michel de Montaigne, William Shakespeare, Miguel Cervantes and Christopher Marlowe. These luminaries were followed by a time of almost total literary eclipse. (Much like today!)

Enter René Descartes, A Key Player In The Drama.

René Descartes was born in 1596, at La Haye, in the West of France, in the broad valley of the Loire. He received his schooling at the Jesuit college at La Flèche, the land for which had been donated to that religious order by the King himself, Henri IV. Descartes showed remarkable mathematical ability at an early age, inventing analytic geometry, a technique that enables one to assign algebraic equations to geometrical figures. It was after leaving La Flèche that Descartes had come to the realization that the obscurities of medieval philosophy, which had been the standard curriculum there, had taught him nothing that he could hold for certain.

For a while he drifted, supporting himself briefly as a gambler; and when war broke out in Central Europe in 1618, the young René Descartes found himself attached to the army of Prince Maurice Of Nassau as a “gentleman observer”. After the rout of the Protestant forces at White Mountain in Bohemia, the Catholic army to which he was attached took up winter quarters at the city of Ulm, in Bavaria. And it was there that, while spending a night in an overheated room, Descartes had three powerful dreams, depicting the obstacles that he must face in his quest for certitude.

In his determination not to be deceived, Descartes resolved initially to doubt everything. This, he believed, was the necessary first step in the direction of Truth. In the process of doubting everything, even the apparent reality of the physical world, Descartes discovered what was for him the bedrock of human knowledge: the certainty of his own existence, implied by the fact that he could doubt. Hence: Cogito, ergo sum: “I think, therefore I am,” set down in his book: Discourse On Method. The word: cogoito, I “think”, was the first principle of knowledge for Descartes; it was also the basis for all his subsequent deductions. Avowing his own existence was an admission that he was a finite, imperfect being. From this premise he deduced the necessary existence of a being who was indeed both infinite and perfect: namely, God. Since God, being perfect, would not deceive man, as well as his reasoning ability--that which gives him such self-evident truths, it followed that the reliability of human reason is thereby assured. It may have come to the reader’s attention that there is more than a suspicion of logical circularity here. Descartes thinks; from this he deduces God; but then God becomes his guarantee that he thinks correctly. But Descartes was living in desperate times, when the foundations of European Civilization had been badly shaken, so he was therefore eager to grasp at any straw that might present itself. Human sense perception can be easily deceived by appearances, he thought, but surely not the light of human reason. It was by this (to us, shaky) reasoning process that Descartes was able to establish (to his satisfaction) a fundamental article of Belief of what would be called today: The Western Rationalistic Tradition, namely, the objective reality of the world of phenomena, as presented in the
unerring theater of the mind. A century before, Martin Luther had taken as his motto: Credo, ergo sum: I believe, therefore I am. But Luther had been a man of faith; whereas Descartes was placing all of his faith in his own reason. In so doing, he had moved Reason to the center of the stage, forcing it to play a role for which it was not entirely suited. In this sense Descartes was the father of modern rationalism. (I would hope that most of us would prefer to assign primacy to Experience.) Benjamin Franklin said: “Experience keeps a dear school, but a fool will learn in no other.”

By the time Descartes had reached adolescence, Galileo had already discovered the predictable, mechanical behavior of bodies in the external world: a kind of motion that was strictly deterministic. Effects followed blindly from causes, with no apparent purpose. But, what about the internal world? Was it, too, destined to be the plaything of determinism? Essential to the Christian tradition, however, is the notion of Free Will. After all, what is the point of The Last Judgment, heaven and hell, if men and women are merely robots? (All that work on the Sistine Chapel Ceiling for nothing?) This was the question that became the source of the famous Mind-Body Dichotomy; and for its solution Descartes was forced to postulate a rigid dualism. External to the soul is the res extensa, all material substances located external to the rational mind, substances whose behavior is strictly deterministic. The soul is the res cogitans, a spiritual, rational, immaterial substance exhibiting Free Will. Only in humans did those two entities come together; and even then only at one tiny point, which Descartes located in the pineal gland, situated near the base of the brain. Only there did the material and spiritual meet—and only tangentially at that.

It is this dichotomy between matter, which operates causally; and spirit, which exhibits purpose, is the source of Cartesian Dualism: a dualism of Mind vs. Body, Spirit vs. Matter. In the sphere of Matter are found stones, machines, plants, cheeseburgers and all animals exclusive of humans. To René Descartes all of these, even the other animals, are mere automata: soulless, devoid of emotions and feeling. To Descartes, the agonized screams of a tortured animal did not signify real pain; they were merely mechanical screeches. As a result, this pernicious notion has long served as a rationalization for countless acts of vivisection and animal experimentation. For Descartes, the only spiritual thing about a human is the Soul: immaterial, and--most important: the font of Reason. Thus the real meaning of Cogito, ergo sum, is: “I am a spiritual substance, which has nothing corporeal in it.” The implications are clear: according to Descartes, we are not to be identified in any way with our bodies—or with the rest of Nature for that matter. The Universe of Aristotle and Aquinas had been considered to be a living, female being: Natura: Mother Nature. But the universe of Descartes was one that was inert, mechanical, and inherently measurable, (and disposable, too). This was a time when, for a person to consider the natural world to be in some sense alive was, in Roman Catholic and Protestant circles, becoming regarded as a scandalous act of impiety. Animism was actually considered to be a form of atheism. One of the fathers at Descartes’ alma mater, the Jesuit college of La Flèche, Louis Lallemant, had this to say about Nature: “We should feel wonder at nothing at all in Nature except only the Incarnation of Christ.” However, a moment would come when humans no longer believed in God’s power to regulate the mechanism of the order of nature, and the little wheels of the human being and the automatistic ones of the beasts would proceed to tick over on their own. In this manner the Cartesian rationalists set the stage for the Death of Nature.

The Birth Of The Mechanical Philosophy

What were the origins of this new philosophy? At the time of the Italian Renaissance (the year was 1417), scholars had rediscovered a poem: De Rerum Natura (On The Nature Of Things), by the Roman poet Lucretius. Lucretius had been a disciple of the Greek philosophers, Epicurus and Democritus, the...
men who had founded what we call the atomistic philosophy, a doctrine which can be summarized by
the famous Democritean quote.17

By convention sour, by convention sweet, by convention colored: in reality nothing but atoms and
the void.

Democritus’ philosophy, especially as interpreted by Lucretius, had been ill suited to the spirit of the
Renaissance, since Neo-Platonism, heavily flavored with magic, was still the dominant mode of thought
in the fifteenth century. But by the 1620s Democritus was a philosopher whose time had come. His new
champion was Pierre Gassendi, a Catholic priest (of all things) who was a colleague of Marin Mersenne,
a monk who acted as Descartes' sponsor. (In this mafia, who was the capo? Answer: Cardinal Richelieu,
the king’s minister).

Atomistic philosophy was to find its way into political theory, also. The Framers of the American
Constitution had imbibed the idea of a free person, seen as a political atom, from the English
philosopher, John Locke.

What are The Essentials Of Mechanism?

• All of the phenomena of the World can be described, represented, in terms of Matter and Motion,
  which in turn follow the laws of mechanics.
• Matter is in turn composed of atoms.
• There may or may not be a subtle substance called the ether, a kind of plenum or reservoir, in which
  the atoms have their motion. If the ether turns out to be absent, then matter moves through The Void.
• The Motion of the atoms is not intrinsic to them; their motion must always come from without. Atoms
  are not “alive” in any sense. In Gassendi’s religious interpretation, the motion of atoms was induced at
  the Beginning, by God; (who then went away on vacation).
• The mechanical representation of the World has to be a completely faithful one. That is, when we think
  about Nature, we are “holding the mirror up to Nature”; the complexity of the mind-stuff and the
  complexity of the World are commensurate with each other, so that the mind can comprehend the World
  exactly.18
• The Appearances can be “Saved” completely; so that The Map will be identical to the Territory.
• The Real World is the one that our Map shows-- (after we have been safely subtracted from it). Thus
  the accepted view is: The View From Nowhere.

More About Descartes

It was a strange paradox: here we find Descartes, Mersenne and Gassendi, three Roman Catholics,
joining forces with the English philosopher Thomas Hobbes (a devout atheist), to create the philosophy
of Mechanism, in the interests of restoring public order, banishing magic, and perpetuating European
Civilization19. Mechanism is, of course, a philosophy that would not only come to threaten the
hegemony of all organized religion, but would also come to deny humans any significance at all in the
cosmos. But there is a haunting resemblance here to Book X of Plato's Republic, in which reason is held
up as the ultimate guarantor of the social order. Although his initial inspiration had come from his
dream in the year 1619, Descartes, to be consistent with his rationalist philosophy, actually distrusted
dreams and other manifestations of the Unconscious Mind.

And the actual life of Descartes? He lived most of his adult life outside of France, spending most of this
time in Holland, which was known as a haven for Free Thinkers. The condemnation of Galileo in 1633 had come as a terrible shock to him, making secrecy even more desirable. Thus we shall never know what Descartes’ true opinions were; after all, his personal motto was: *larvatus prodeo* —"I present myself masked". (It is very awkward to have had one foot in the Scientific Revolution while keeping the other one in the Vatican—Ask me how I know!) He died in Stockholm in 1650, and was buried in Paris, in the church of St. Germain des Près—with the exception of his skull, which is also preserved in Paris—but at the Musée de l’Homme, the Anthropological Museum. There must be a cult of skull-worshippers in Paris!

**What are the distinguishing marks of Cartesian thought?**

[1] It is based upon formal reasoning, with Euclid’s geometry taken as a model. With Euclid we start with self-evident axioms and postulates (what Descartes called: “clear and distinct ideas”), advancing little by little, to more complicated statements that we call theorems. It must be said here that Descartes viewed Euclid with some disapproval, on the grounds that he was lacking in sufficient rigor; after all, Euclid’s axioms and postulates were allowed to go unproven—he took too much for granted. A die-hard Cartesian will start by assuming absolutely nothing. As we shall see, Descartes had a neurosis, and its name was *Certainty*.

[2] Practical matters or special cases are of little interest. Descartes was seduced by the abstract power of a Euclidean proof—its generality. An abstract proof must be independent of context. Its power lies in the fact that it holds in every case—one size fits all. This type of thinking is highly invasive; there is an overpowering temptation to rely upon it to solve all human problems, for it appears to be The One Right Way.

[3] And there is only One Right Way: the Cartesian Method for ascertaining the truth in all fields of knowledge. The more practically oriented Aristotle had urged his disciples not to aim at certainty, necessity or generality beyond “the nature of the case”. Thus Descartes, in his enthusiasm for theoretical reasoning, gave to the intellect a priority that it had never before enjoyed—and one that it doesn't really deserve.

[4] We have to re-invent philosophy from scratch. Descartes did not advocate throwing the work of the older philosophers into the trash barrel, but he did insist upon subjecting their theories to the scrutiny of the Cartesian Method.

[5] His very use of the mind was mechanical. We have seen that Descartes conceived of the world as a piece of clockwork; we notice that his method for using the intellect to solve problems is likewise mechanical. It is a method for taking machines apart and reassembling them; it is never a method for inventing or discovering anything. It is a set of instructions for linear thinking. Since the most fundamental reality for Descartes was his own thinking, everything he subsequently touched upon was condemned to be “theory-based”.

[6] In order to yield valid knowledge, the Real World must be simplified, de-contextualized, into a theoretical construct. If you wish to apply the Cartesian method to studying a cow, the cow can be assumed to be a spherical, or possibly a cylindrical one; in that way the mathematical treatment becomes more straightforward. But it is the context that provides the meaning; if you ask for the meaning of something, you are asking for its context: a semantic question. Anything taken out of context becomes meaningless; (it smacks of schizophrenia).

**Is it possible for Descartes’ philosophy to be valid even if it has a neurotic context of its own? Here the Reader Must Decide…(good luck with that).**

The power of the Cartesian method is its perfect generality, its absence of context: it is supposed to work
in the same way as a high school geometry textbook, serenely analyzing the universe. But what was its significance for Descartes? Was it just an airy exercise in abstract thought? It is only fair to ask if this exercise in non-contextuality had a hidden context of its own. Did the development of the Cartesian Method have a “hidden agenda”? According to the Cartesian program of systematic doubt, The Real Cartesian Truth is by nature context-independent, so that there couldn’t be a context to Cartesian thought! A Cartesian would probably tell you that it sprang like Athena, full-armed from the brain of Zeus. But this is nonsense! In short, what was driving that man? At the time Descartes was writing, we have seen that Europe was submerged in a Thirty Years’ War. The actual fighting took place in Germany, but the real antagonists were France and Spain: a proxy war. The leader of the French forces was Armand Jean du Plessis, better known as the Cardinal Richelieu. Richelieu worked tirelessly, ruthlessly, for the purpose of re-establishing order at home, while conniving abroad to engineer the defeat of Spain. And Descartes was, albeit indirectly, really Richelieu’s protégé—one of his shock troops. Thus Descartes was working in an ambience of fear: fear of anarchy, and of intellectual and religious chaos, of all against all. He was in fear of himself. What if he could not prove the existence of God? Faith was of no use, as we have seen; for he had no recourse, save his own intellect. This mental trap produced incredible quantities of anxiety—anxiety that have for centuries plagued people, even during my own lifetime, especially Roman Catholics in Europe and America. The impossible goal of Descartes was to refine the “machinery” of the intellect in such a way as to produce overwhelming religious certainty—the kind of certainty which would unite all in agreement, Catholics, Protestants and Atheists, to ensure the continuity of European Civilization, as well as harmony between those newly created dualistic poles, the Natural and the Supernatural.

Before the 17th century, and its attendant bloodshed, the religious position taken by the leading writers and philosophers (worldly, sensual spirits such as François Rabelais and Michel de Montaigne), had been one of tolerant skepticism. By the 1630s there was no further room for either tolerance or skepticism. Instead, men like Descartes and his direct sponsor, Marin Mersenne (Richelieu’s Commissar Of Culture), were prepared to sacrifice everything else in trade for certainty, order and control. At the time that Descartes was a student at La Flèche, Montaigne’s essays had been part of the required reading for every French schoolchild. In one of these essays can be found these words:

“Unless some one thing can be found about which we are completely certain, we can be certain about nothing.”

We can imagine young Descartes, then, overwhelmed by anxiety over the future, dreaming of the day when he will take up the challenge: “Can’t I be certain that I doubt? If so, I must be thinking. How can I think, if I don’t already exist?” Thus Cartesian philosophy was not formulated in a vacuum, but rather as an attempt, in sorely troubled times, to refute the genial, tolerant Montaigne, and to replace his gentle brand of skepticism with the intolerant Cartesian variety, in which everything is held as false unless it can be proved to be true--guilty unless proved innocent. This, then, was the missing context: it was one of existential anxiety. This quest for certainty was the drowning person’s grasp for a straw. One can almost hear Descartes say: “When you’re in trouble, when you are in a state of extreme emergency, you need to be rigorously logical, or you’re lost.”

We have seen that by the 17th century the house of cards that was Medieval Civilization was undergoing a long collapse, and the desire to put it back in order gave rise to a philosophy that was tight, narrow and “theory-bound”—and more than slightly mad. But there is more to the story than that. For by now, Cartesianism, like a virus, has so thoroughly infected Western thinking, and so completely infiltrated our vocabularies, that we have become largely unaware of its existence: Today we can speak of "Mind
versus Matter” without giving it a moment’s thought.  

For Descartes, the body was nothing more than a kind of “meat vehicle”. As a result, much of the history of modern medicine has been a saga of the invention of emergency high-tech responses to pathologies incurred by individuals who have resolutely refused to accept responsibility for their own bodies—massive interventions, undertaken at the eleventh hour (doubtless on the grounds that "this body isn’t really Me; I just live up here in the pineal gland...").

Finally, it is necessary to point out that by a paradigm we mean a pattern. What, then do we mean by the Cartesian Paradigm—a phrase that had been in considerable use during the past century? The Cartesian Paradigm is simply a complex metaphor for dealing with reality. For one thing, the Cartesian method of thought is identical in pattern to the way in which one would repair a broken machine, say a clock. We take it apart, down to its smallest cogs, its atoms of machine-ness—until we can go no further. Then we reassemble it (replacing parts when necessary). If the universe is a piece of clock-work, mechanical and dead, then the method of studying it must also be mechanically-inspired. The Cartesian whole, then, is merely the sum of its parts—no more, no less. Once this method has been found to work in some cases, it became the recommended method for every case. And the Cartesian method is supposed to be independent of context. In the next chapter we shall see how Cartesian physics was refuted, but his method was applied to the Universe by a strange, twisted man, The Last Of The Magicians: Isaac Newton.

**What it All Meant to a Kid Growing Up in the Mid-Twentieth Century**

At the time I grew up in San Francisco during the 1930's and 40's, there was little or no doubt about the merits of modernity. We all considered ourselves lucky to be born in this time and place, rather than under the precarious conditions experienced by our unfortunate ancestors. Were we not living in the Land Of The Free? The end of the Second World War had brought about the defeat of the forces of racist irrationality, and therefore we had every right to expect that it would be only a matter of time before peace, freedom and prosperity would be the lot of everyone in the world. We were confident that the age of massacres was over. As a child I had attended the 1939-1940 World’s Fairs both in San Francisco and in New York. There I had an opportunity to view the latest technology, full of promise of better things to come. In my late teens I was employed at the original United Nations Plenary Session in San Francisco, and at the time I naively imagined that the statesmen who addressed each other from the podium were actually there for some altruistic reason. The Forces Of Good seemed to have won a definitive victory, and those were stirring times. Everything that I had seen and heard in those days of euphoria seemed to vindicate the program of Modernity, and I believed with all my heart that the engine that was driving Modernity was the progress of Science. And, in a way it was. I wanted to be a part of it. As long as the cornucopia of Science was continuing to produce “quasi-solutions,” and the residue problems had not yet appeared, then the progress of Science seemed to be at one with the progress of humanity. I was a good student, for I had so much to learn….

Notes to Chapter Five:
1. Friedrich Wilhelm Nietzsche, 1844-1900. German philosopher.
3. All of the urban amenities depend on food, energy and raw materials. None of these are produced by urbanites. Hence the function of the city is extractive: a parasite upon the landscape.
Presently (2012) ascribed to the effect of a gigantic volcanic eruption that took place on an island near Java in about the year 1270.


Many people thought that the change from a geocentric picture to a heliocentric picture involved a physical displacement!

It seems as if the horrified fascination that the Afghan tragedy has for us is in part due to our suspicion that this is the normal state of affairs in the world, and we ourselves constitute but a temporary exception.

The usual name given for this political entity is the Holy Roman Empire, whose rulers proudly traced their legitimacy all the way back to Charlemagne, but for reasons of clarity it is useful to “call a spade a spade”.


Strangely, in his writings Descartes disparaged dreams, claiming that they are not a source of useful knowledge, since their content is not “clear and distinct”.

Galileo’s works, though condemned by the Church, were in the library of the priest Marin Mersenne, in Paris. Mersenne in turn made them available to Descartes. Rome’s rules didn’t hold in Paris.

See: *When Elephants Weep*, by Gregory Moussaievich Masson, for a fascinating discussion of this question. Do beasts have feelings? Do they feel love, hate and fear? Animal behaviorists claim that we merely anthropomorphize when we ascribe any human characteristic to other animals. Why? The animal behaviorist is conditioned to believe thus. Professional animal handlers know better.


“Je suis une substance immatérielle, et qui n’a rien de corporel.”

Speaking on the subject of this quote, Aldous Huxley remarked: “In the seventeenth century Lallemant’s phrase seemed to make sense. Today it has the ring of madness.”


Democritus: a Greek philosopher; exponent of atomism 460-362 B.C.

This last notion seemed perfectly reasonable at the time. Those who had hoped for a Theory Of Everything are beginning to wonder. How can the Mind comprehend the World when it is a part of that World? Is it like pulling ones-self up by one’s bootstraps?

This should not be taken to mean that all four men had the same identical philosophy. They were all very different people. But the effect of their joint effort was The Mechanical Philosophy.


Here is my own direct translation of what Descartes said:

“The first precept is for me never to take anything for the truth when it is not obvious to be such: that is to say, to avoid haste carefully, as well as forming an opinion, and not to include any more in my judgments than which presents itself clearly and distinctly to my mind in such a way that I would not have any occasion to put it in doubt.

“The second is to subdivide each of the difficulties I wish to examine into as many parcels as possible, and as would be required to better resolve them.

“The third is to order my thoughts, commencing with those objects which are simplest and most easily understood, to advance, little by little as by degrees, arriving at an understanding of the most complicated: even assuming an order among those which do not precede one another naturally.

“The fourth is to make everywhere so complete an accounting, and such general reviews, as to be sure of
having omitted nothing.”

(21) Unfortunately space does not permit a complete discussion of the collision of the disintegrating European social structure with the will of this ruthless politician, out of which emerged the nation-state that has been such a familiar fixture on the world map. At home, his drive to dominate crushed the power of the independent French nobility, and split the Protestants into factions which he then pitted against each other. He established the Académie Française for the purpose of standardizing the French language, and suppressing the rich profusion of colorful dialects spoken in his country— the reason that the French language is so monstrously inflexible today. His agent Mersenne understood the power of music to sway the mind from the straight and narrow path of rationality; so determined he was to control this, that he proceeded to lay the groundwork for the orderly classical music of the Baroque period. Mersenne had been deeply concerned about the proliferation of occult secret societies in Europe; moreover, the profusion of alchemical treatises published in Paris during the 1620’s provoked him into establishing academies for the purpose of extirpating that field of study. At the time of Richelieu’s death a prominent Italian remarked: “If there is a God, he will have much to answer for; but if there is not, then he was a good man.” This illustrious Italian, another Baroque personage, who was that Italian? It was the Pope, Maffeo Barberini!

(22) This form of pathological rationality, called rationalism, has been used to distort the emotional development of every French child since the Revolution. And not only in France! A Cartesian skeptic is one who treats any proposition as false until it is regularly demonstrated in a laboratory. We have all met one or more examples of this genre, and wondered about the origin of the syndrome. Before the time of Descartes, a skeptic was merely a person who maintained an open mind, neither asserting or denying any proposition, until it was examined, and compared with experience. At the time after the Reformation, educated Europeans were especially influenced by the writings of the Greek skeptics, the most famous of whom was Pyrrho, founder of the school of Skepticism, and a contemporary of Aristotle.

(23) This quote is from the essay, Apologie de Raimond Sebond.

(24) The impact of the French Rationalists on the rest of Europe became enormous—especially after the Revolution. The results of the Cartesian political spirit can be seen by anyone who studies the aftermath of the French and Russian revolutions. There is more than a touch of Rationalism evident in the Seal of the United States: Novus Ordo Saeclorum”: “a new order of the ages. At this writing the “new order” is beginning to look like a re-run of those past “new orders: like the Roman Empire, for instance.

(25) Paradigm, comes from the Greek: para-deigma: a pattern in the sense of a template. The kind of pattern used in making garments.