



# *The Spiritual Universe*

One  
physicist's  
vision of spirit,  
soul, matter, and self

Fred Alan Wolf, Ph.D.

*The*  
Spiritual  
*Universe*

One Physicist's Vision  
of Spirit, Soul,  
Matter, and Self

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# Contents

[List of Illustrations](#)

[Acknowledgments](#)

[Preface to the Paperback Edition](#)

## [Part 1](#) [The Faulty Greek Foundation Stone](#) [for a Soul Definition](#)

### [CHAPTER 1 Some Soulful but Wrong Questions](#)

[Have We Lost Our Souls to Modern Technological Life?](#)

[Choking Smokers, Don't You Know the Joker Laughs at You?](#)

[Some Scientific Soul-Searching](#)

[The Mystery of the Soul: Can We Find a Scientific Solution?](#)

[A "New Physics of the Soul"](#)

[What Is Interesting and Original About This Book?](#)

[What Is This Big Mystery of the Soul?](#)

[The Difference Between Soul and Self](#)

[The Soul Is a Virtual Process and Not an Entity](#)

[From the Wrong Question to a New Understanding of the Soul](#)

### [CHAPTER 2 Aristotelian Soul Physics](#)

[What Is the Soul?](#)

[Do You Have a Magnetic Soul?](#)

[Spiritual Evidence? What's That?](#)

[The Emotional Soul](#)

[The Feminine Soul](#)

[The World-Soul](#)

[Aristotle: The Soul Is the Principle of Animal Life](#)

[Hard to Answer Questions About the Soul](#)

[No Soul Without a Body?](#)

[Body and Soul As Viewed by a Saint](#)

[The Argument for the Material Soul](#)

[The Argument for the Immaterial Soul](#)

[Body and Soul As Viewed by Aristotle](#)

[The Soul Is a Special Substance](#)

[Potential and Actual](#)

[Aquinas and Aristotle: A Look at the Prime Mover](#)

[Aristotle's Reasoning: The A, B, C, and D of It All](#)

[Does Aristotelian Physics Prove That the Soul Exists?](#)

[The Soul Is the Prime Mover](#)

[Aquinas: Movement Without a Physical Body?](#)

[The Real Soul Without Space, Time, and Matter](#)

Do-Be-Do-Be-Do: Action and Existence  
All and Nothing at All  
Nouns and Verbs: Things and Action, Which Is Real?

### CHAPTER 3 Platonic Soul Physics

The Early Greeks and the Power of Reason  
The Pythagoreans: Sacred Numbers in Matter  
One, Two, Three, and Four: The Numbers of Heaven  
Idealism and Ancient Realism: The Failure of Our Senses  
Plato's Idealism and the Soul  
Let the Philosophers, Not the Poets, Rule!  
Reality, Illusion, and Idealism  
Primary Reality: The Original Given by God  
One Ideal, Many Copies  
Plato's Soul Concept: Nothing to Do with Feelings!  
Plato's Line and Cave: Reality and Illusion  
Keeping Your Toes on the Line  
Ratio Means Rational: The Creed of the Soul  
A Cave-In of the Mind  
Plato's Cave Today: The TV Room  
Why Plato's Cave Is Important to a Scientific Model of the Soul  
Classical Soul Physics: The Death of Socrates, but Not of His Soul  
Doubting Cebes  
The Soul Survived Death According to Greek Physics  
Opposites and Becoming  
Relativity of Opposites  
The Soul, Being a Nonphysical Substance, Can Never Be Destroyed  
Form and Substance  
The Greek Mind-Physics: How the Soul Remembers  
Why Schrödinger's Student Can't Remember His Past Life  
Plato's Proof of Immortality: Or Why We Have Evil Natures  
Plato's Argument  
Evil Is Rather Specific

Part 2  
From Ancient Egypt and Albert Einstein to Adam and Eve:  
The Foundation for a Neosoul

### CHAPTER 4 The Ancient Basis of a Modern Soul

Look Backward, Angel!  
Early Visions of the Soul  
A Brief Look Backward  
God Is Everywhere and in All Nature  
In the Beginning  
The Dramatic Stages of the Soul  
A Brief Look at Your Nine Souls  
A Modern Egyptian Soulful Insight  
The Soul's Adventure in the Afterlife  
The Hidden Soul and the Meaning of **ℵ** (Aleph)  
The Code of the Soul  
What's It All About, Aleph?

## CHAPTER 5 Resurrection Physics: A Lesson from the Land of Joking Smoking Skulls

Tipler's Life, the Universe, and Everything

Tipler's "Life"

The Expanding and Contracting Universe

The Big Bang, Big Crunch Model of the Universe

How Heaven and Hell Arise Naturally at Omega in Tipler's Model

Time Gets Kind of Funny at the End of Time

From the Big Bang Until the End of Time

A Tibetan Lama in Cyberspace?

## CHAPTER 6 Mind, Soul, and Zero-Point Energy

All and Nothing at All About Soul

What Is a Vacuum If It Is Not Nothing?

What Is Zero-Point Energy?

What Is Matter?

The Soul: Swimming in a Sea of Negative Energy Electrons

The Electron and I

## CHAPTER 7 Quantum Evidence: The Self and the Soul

O, Keep Not My Soul in Cyberspace!

A New Vision of the Soul?

Are Human Beings Conscious?

The Soul Weighs In

Taking Your Soul for a Spin

A Soul-Spinning Tale of Heaven and Earth

Some Basic Pointers About Spinning Particle Physics

Back to a Yarn-Spinning Encounter

The Mysterious Heartfelt Relationship of One Soul to Another, Particularly in Dealing with the Question of Soulmates

The Mysterious Relationship of the Soul with the Self, Including Identification with the Body

Really One in Two Places at the Same Time

Forgetting the Soul

Remembering the Soul

The New Physics of the Soul

Knowledge and Being

The Morphosis of Knowledge

Self Identification: The Fall of the Soul into Space-Time

How You Can Lose Your Soul

The Return to Secret Knowledge: Remembering the Sacred

The Nature of Prying

The Communion of Spinners

Adam and Eve: The Quantum Physics of Knowledge and Identity

Secret Knowledge and Soul Connection

## Part 3 The Rising Soul: Into Nothing We Go

## CHAPTER 8 The Buddhist Nonsoul

A Brief History of an Enlightened Soul Physicist

Seeing Through Illusion

[The First Spiritual Physicist](#)  
[Buddhist Physics: All Is Dukka!](#)  
[The Four Buddhist Axioms of Creation: Nobel Truths](#)  
[Inertia, Entropy, and Action: The Physics of Emotion](#)  
[Is You Is \*and\* Is You Ain't My Baby!: Quantum Thinking](#)  
[What the Buddha Taught About Nonsouls](#)  
[The Tibetan Buddhist Soul Returns](#)  
[What the Buddha Said About the Soul](#)  
[Zen Mind, Zen Body, More Quantum Thinking](#)  
[To Be Liberated, Sit and Enjoy the Void](#)  
[The Humor of Nonsouls](#)  
[A Brief Look Ahead](#)

## [CHAPTER 9 Good, Evil, and Soul Addiction](#)

[Two Forces in the Universe](#)  
[Who Knows What Evil Lurks in the Hearts of Men?](#)  
[The Soul and Its Shadow: Addiction](#)  
[Soul Ecology and Soul Pollution](#)  
[The Shadow of My Soul: Addictive Desire](#)  
[Spirit Trapping](#)  
[Patterns of Uncertainty](#)  
[The Fall of the Spirit into Matter: The Soul Believes It Is Ego](#)  
[We Think, Therefore We Are All Hungry Ghosts](#)  
[The Circle of Conditioned Genesis](#)  
[Midnight: Ignorance, the Cause of Illusion](#)  
[One O'clock: Ignorance Leads to Volitional Action and Karma](#)  
[Two O'clock: Volitional Action and Karma Lead to Awareness](#)  
[Two-Fifteen O'clock: Peruvian Insight into Spirit](#)  
[Three O'clock: Awareness Leads to Bodymind \(Seat of Habits\)](#)  
[Four O'clock: Bodymind Leads to Senses](#)  
[Five O'clock: Senses Lead to Interaction](#)  
[Six O'clock: Interaction Leads to Sensation](#)  
[Seven O'clock: Sensations Lead to Desire](#)  
[Eight O'clock: Desire Leads to Grasping](#)  
[Nine O'clock: Grasping Leads to Existence: Matter's Coming into Being](#)  
[Ten O'clock: Existence Leads to Birth](#)  
[Eleven O'clock: Birth Leads to Death](#)  
[Noon: Transit Leads to Rebirth!](#)

## [CHAPTER 10 The Soul Trickster: Chaos, Lies, and Order](#)

[Who Is The Trickster?](#)  
[The One-Legged Winged Trickster](#)  
[At the Boundary of Chaos and Order](#)  
[Dancing with Ch'i](#)  
[It's a Joke, Son! \(The Fred Allen Comedy Radio Show\)](#)  
[Trickster Balancing Act: Science on the Edge](#)  
[Trickster Oversoul of God's Dog \(Spelled Backward?\)](#)

### [Part 4](#) [The Falling Soul: Out of Nothing We Come](#)

## [CHAPTER 11 Heaven, Hell, Immortality, Reincarnation, and Karma](#)

[Where Have We Been?](#)

[Where Are We Going?](#)

[Heaven and Hell](#)

[Immortality](#)

[Playback of the Record at Transit Time](#)

[Reincarnation](#)

[Karma and Skandha](#)

[Five Scandalous Skandhas](#)

[Matter](#)

[Sensations](#)

[The Uniqueness of the Sixth Sense: Mind Object and "I"](#)

[Perceptions](#)

[Mental Formations](#)

[Consciousness](#)

[Quantum Karma Skandha](#)

[Psychoid Physics and the Vigilance of Intent](#)

[The Quantum Watched Pot](#)

[If There Is No Soul, Then What Reincarnates?](#)

## [CHAPTER 12 How Many Souls Are There?](#)

[The One and Only Has Many Faces](#)

[Let Me Count Thy Ways](#)

[Doubles, Triples, Quadruples, How Many am I?](#)

[Your Soul: The One and Only?](#)

[An Absurdity of Logic](#)

[Bass's Proof](#)

[Schizophrenia Denied](#)

[What Is Matter? Never Mind! What is Mind? No Matter!](#)

[Maya's Veil: You Go Your Way and I Go Mine](#)

[Maya Accepted, Then What?](#)

## [CHAPTER 13 Soul-Talk](#)

[A Ship of a Fool](#)

[The Inner Self and Outer Soul](#)

[The Soul and the Self Are Not Identical](#)

[The Ancient World-Soul](#)

[The Geometry of the Soul](#)

[Boxing the Soul](#)

[Quantum Physics and the Two Time-Streams of the Soul](#)

[The Mothers of Creation](#)

[The Prayers To and From the Future](#)

[Do You Have a Soul?](#)

## [CHAPTER 14 Some Soulful and Right Answers](#)

[Definitions of Spirit, Soul, Matter, and Self](#)

[Spirit](#)

[Soul](#)

[Matter](#)

[Self](#)

[Soul and Self: A Conversation](#)

[Notes](#)

[Bibliography](#)



## Index

# List of Illustrations

## FIGURES

- [2.1 Soul Levels](#)
- [2.2 X Is the Prime Mover at the End of the Line of Dominoes](#)
- [3.1 Plato and Aristotle](#)
- [3.2 Square Numbers](#)
- [3.3 Triangular Numbers](#)
- [3.4 The Line of Knowledge and Opinion](#)
- [3.5 The Inverted Line: Our Present Crazy Condition?](#)
- [3.6 The More Inverted Line](#)
- [4.1 The Ka or Double](#)
- [4.2 The Soul in the Neterworld](#)
- [5.1 The Universe from the Big Bang to the Big Crunch](#)
- [5.2 Tipler's Universe 10 Million, Billion Years from Now](#)
- [5.3 Tipler's Universe 100 Million, Billion Years from Now](#)
- [5.4 Tipler's Universe 1 Billion, Billion Years from Now](#)
- [5.5 Tipler's Universe 10 Billion, Billion Years from Now](#)
- [6.1 A Jitterbugging Electron](#)
- [6.2 The Dirac Sea](#)
- [6.3 The Dirac Sea Is Filled](#)
- [7.1 The Spinner: A Particle That Makes Up the Soul's Mind and the Body's Matter](#)
- [7.2 Two Spinners](#)
- [7.3 Heaven and Earth Parallel Minds Model](#)
- [7.4 An Overlapping of Possibilities](#)
- [7.5 A New Spiritual Reality: The Virtual Particle and the Real Particle in Interaction](#)
- [7.6 A New Loving Reality](#)
- [7.7 The Fall of the Soul](#)
- [7.8 Stage 1: The Self and the Soul as an Unbroken Whole](#)
- [7.9 Stage 2: The Self and the Soul as a Nearly Broken Whole](#)
- [7.10 Stage 3: The Self and the Soul Are Separated](#)
- [7.11 A God's-Eye View of the Whole](#)
- [8.1 Noble Truths: A Vision from Thailand](#)
- [9.1 The Dynamic Cauldron of Spirit](#)
- [9.2 If A, Then B](#)
- [9.3 One, Two, Three O'clock Rock](#)
- [9.4 Atomic Reality](#)
- [9.5 Dancing in the Dark with a Ghostly Electron Leading](#)

- [10.1 The Trickster at Work](#)
- [10.2 The Yin-Yang Symbol](#)
- [11.1 Magritte's \*Sea\*: The Self Reflects the Soul As the Painting Reflects the Sea](#)
- [11.2 The Endless Cycle of Birth, Death, and Reincarnation](#)
- [12.1 Robotina's Schizophrenic World](#)
- [12.2 The Stopping Buck of Observation](#)
- [13.1 Soul-Talk As Kepler Saw It](#)
- [13.2 Quantum Soul-Talk \(A\)](#)
- [13.3 Quantum Soul-Talk \(B\)](#)
- [13.4 Quantum Soul-Talk \(C\)](#)
- [13.5 Quantum Soul-Talk \(D\)](#)
- [13.6 Faster-Than-Light Waves of Future-Seeking Possibility](#)
- [13.7 Faster-Than-Light Waves of Past-Seeking Confirmation](#)
- [13.8 The Overlap of FSP and PSC Waves](#)
- [13.9 The Creation of Karma: Cause and Effect](#)
- [13.10 The Mothers of Creation](#)
- [14.1 The Soul Is Everywhere You Want To Be](#)
- [14.2 The Soul Is That Old Sweet Song We Know So Well](#)
- [14.3 The Infinite Guitar String of the Soul](#)
- [14.4 Definitions](#)

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## Preface to the Paperback Edition

It has been about three years since I sat down to write this book. As many of you know, a lot can happen in three years, and of course much has. While most of *The Spiritual Universe* remains as originally published in the 1996 hardcover edition, I decided to completely update all of the illustrations and include a few new ones. Those of you who are seeing the book for the second time should be delighted by the new illustrations. I believe they convey these difficult ideas even better than in the hardcover edition.

Most of the chapters remain as written earlier. However, I have simplified some of the material, particularly in [chapters 7](#) and [12](#), which were especially difficult to grasp conceptually. I have also made some minor changes elsewhere throughout the text that I believe will make the book more comprehensible.

The main change, as the new subtitle suggests, is in emphasis. I no longer see this book as a “proof” book. I decided that the notion of quantum physics proving the existence of anything spiritual is problematic at best and impossible to accept at worst. Many readers of the hardcover edition found the idea grand. One reader thought that there were strong parallels to Hegel's thought in works such as *Science of Logic* and *Phenomenology of Mind*. Another enjoyed my descriptions of the work done by physicists, as well as how quantum physics complemented Buddhist beliefs. Many were pleased that I was willing to take on the task of “boldly asserting the importance of ‘Soul’ in science.” But some were put off by the notion of “proof,” and thus failed to read the book in the proper light. So the book is not a proof of anything; it is a simple model of one aspect of the spiritual domain of our fragile existence: how consciousness and matter overlap.

How should one read this book? I suggest you read it with an open mind. Keep in mind that science and spirituality, like cultures from opposite ends of the earth, have a difficult time dealing with each other. Words like “proof” have different meanings depending on whether or not you are a scientist. The main reason science is useful is that it attempts to solve our human problems. The main reason spirituality is useful is that it attempts to solve our human problems. It's time that we recognize that the solutions science and spirituality offer are one and the same.

Fred Alan Wolf

San Francisco

## PART 1

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# THE FAULTY GREEK FOUNDATION STONE FOR A SOUL DEFINITION

WHAT DO WE MEAN by the *soul*? This word, which often enters our lives with such deeply implied meaning, remains a mystery when we attempt to define it. Solving this mystery is the goal of this book! However, while few of us doubt we live in a physical universe, we rarely stop to think we also live in a spiritual universe. How does spirit exist in this universe? Does it fill a volume of space? Does it persist through time? What is this spirit? Is it the same as the soul? Can science help to define spirit and soul? To answer these questions and many more we shall be asking, we need to go back in time and set a foundation for inquiry. In [part 1](#) we do just that. We look at many soulful questions as we ponder our spiritual existence. It helps to know that ancient minds, possibly wiser minds, and deep-thinking minds from the dawn of early Greek civilization attempted to define the soul, the self, the spirit, and their relationship with the physical universe. However, as we shall see, a problem arises as we attempt to follow our Greek forebears in their defining efforts: namely, we may be answering the wrong questions! So let us see how we came to consider the biggest mystery facing all of us—the mortality of individual life and the survival of something so mysterious and yet so much felt by each of us.

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## CHAPTER 1

# Some Soulful but Wrong Questions

*My Moon is in Uranus.  
My future's lookin' spotty  
When I went into a trance,  
My soul left me for another body.*

—“New Age Blues,” lyrics by Ray De Sylvester,  
Scott Savage, Bil Thorne, and Chris West; music by Elfheim

THIS IS NOT AN EASY book for a scientist to write. I feel conflicts arising in me as I attempt to put my thoughts into words. These conflicts occur because I should know better than even to attempt to write about the mystery we call the soul. I should know better because I have been trained in that objective information-base of the world called physics—the acknowledged king of the sciences. Unfortunately, this king, unlike Old King Cole, seemingly has no room for any soul, merry, old, or not.

I'm not the first nor the only physicist-philosopher to speculate about the issue of the soul's existence and its seemingly precarious, mysterious, and subtle relationship with the energy and matter of our bodies. As we shall see, Aristotle and Plato also worried about its existence. Aristotle saw the soul as a subtle substance, one that would vanish when the body vanished in much the same way that the sharpness of a knife will vanish when it is melted down in a furnace. Plato, sharing a somewhat similar view—after all, he was Aristotle's mentor—also saw the soul as a substance, but as a nonphysical one, which was eternal, idea-like, and capable of existing beyond the body.

Where does modern science and technology stand in this debate? Can today's physics and computer technology provide us with the hope of eternal life? Set aside these questions for the moment and consider how answers to them might change our lifestyles.

## Have We Lost Our Souls to Modern Technological Life?

We live the good life. Yes, indeed. We are better fed, more



protected, and bathed in the light and luxury of countless new technical achievements springing up every day, at least in the Western world. In the so-called Third World countries, the good life of material wealth may be absent, but if all goes as planned by ideal altruistic ruling and governing forces, soon the whole world will enjoy Western-like material wealth.

Many Westerners feel we are approaching utopia: living longer and, perhaps with the aid of science and technology, enjoying more fruitful lives. The subject of life-extension through cryogenic storage (literally freezing the dead) until science reaches the understanding and technology to resurrect the dead is becoming more popular. Although modern medicine promises us longer life and even the prospect of living forever as perhaps programs in a computer or as cryogenically frozen heads, I think few of us take heart from this. Consider the following: Upon resurrection, just what or who would be resurrected?

As we live longer, we face untold population growth reaching into ten billion by mid twenty-first century. Do we have enough material wealth and scientific know-how to support all of these souls? Or should we reconsider whether people are souls at all and, if they are not, should they be subject to the same laws as other plant and animal population controls? In other words, should population control be the right of people everywhere?

This leads us to reconsider what we mean by life and death and what we could mean scientifically by the soul. In the West the question of death is hardly ever considered. Except for immediate and personal tragedy, we see no signs of it anywhere, except for the make-believe body count we watch on TV cop shows and the like and perhaps an occasional news broadcast describing an auto fatality or an assassination of a political figure. Most of us seem to feel we will live forever. Of course many intelligent, sensitive individuals see through this charade.

Beyond the abortion issues, population growth, and frozen dead-heads, there are other darker shadows in the bright light of the setting Western sun and foul-smelling scents in the chilly dusk wind that howls in the future. Our Western approach to life seems to be leading to an ever-growing “cool” isolation—this insularity results in many people finding themselves only able to communicate with the world from behind computer screens or within the confines of an office. We are growing apart from each other, and this lack of communion is taking its toll.

*Choking Smokers, Don't You Know the Joker  
Laughs at You?*

Our failure to communicate has a funny side to the chill. My recent trip to New Orleans brought this realization to me. There was a surprisingly cool crispness in the air as my wife and I enjoyed Halloween night in the normally balmy Big Easy. The French Quarter was chock-a-block with the usual ghosts and goblins, but there was something else present—something I would call sinister and funny at the same time.

Many walked Bourbon Street dressed in skull masks. I felt a giddy laughter bubbling inside of me because it appeared that no one was taking death seriously that night. I especially found it amusing to see these walking skull-heads blowing cigarette smoke out of their lipless, toothy, grinning mouths.

I felt as if death was present, from the time I arrived in the French Quarter until the moment I left. That made me wonder: Have we in our growing isolation allowed our souls to slip from our grasps as easily as the smoking skulls let loose their clouds of burning tobacco? Is our soul-loss due to our present day isolation?

Machines are of no help in this question. They do what we find to be drudgery. Yet, in ancient days there was wisdom to be gained in the old dictum of Buddhist life—*chop wood, carry water, clean your rice bowl*. Our modern life seems to have made that old dictum vanish into the pages of ancient history. We use machines to chop our wood, to pipe water into our homes, and to wash our rice bowls. Or we go to restaurants where we order from a mechanically smiling waitperson, who, having taken a course in operant-conditioning, responds with a heartless, “Hi, I’m Brian, and I will be serving you this evening. Our specials are...”

We need only look around us to become disheartened. People become machines to survive at their jobs. We are ever building labor-saving devices to make life easier for us as we sit in the lap of stupor having nothing better to do with our time than watch *Roseanne* on the boob tube.

The modern world appears to be run by every different kind of machine imaginable. These machines are becoming more and more complex as modern computers grow tinier and tinier. We even see these devices, products of ingenious human thinking, gradually replacing the humans who designed them!

With this growing mechanical disillusionment, something else gnaws at us. Are we *all* soon to be replaced by machines? Artificially intelligent though they be, they’re mechanical soulless entities, aren’t they? Metaphorically speaking in the hidden-meaning names of rock musical groups from the sixties, our machines and our life styles seem to be leading us to a twenty-first century bleak landscape of modern heavy metal, concrete covered pathways leading to The Grateful Dead, and lifeless non-floating Led Zeppelins. Today we are facing the notion that we are again a lost

generation: a world without soul.

Are we indeed in danger of losing our souls only to be replaced by modern artificial intelligent conveniences? Some scientists<sup>1</sup> believe our souls are nothing but artificial intelligence devices—sophisticated wetware computer programs—nothing more and nothing less. Other scientists believe we will find our souls in the minuscule interactions of atoms and molecules that ultimately fuel the activity of human biological functioning. And to other scientists, possibly like myself, the soul remains a very big mystery not to be confined to the folds of flesh we call our human bodies. Yet, at the same time, is it necessary that it should be found there? Is there someplace else should we look?

Indeed how should I, as a scientist, look for scientific proof of the soul? My physics knowledge is both a gift and a curse insofar as it is needed to define the spiritual universe and its agent, the soul. The gift is that I see, *objectively*, how much of the physical universe works. That perspective gives me a certain peace of mind that the universe is not an accident and that human life is meaningful and purposeful. The curse is that when it comes to seeing essential matters of the heart, *subjectively*, I often see nothing. My scientific mind habitually takes over and I become skeptical and unfeeling. But my path in this life is through my mind as well as through my intuition. So I have to work to gain subjective spiritual insight that is heartfelt as much as most nonscientists may have to work to gain objective scientific knowledge.

## Some Scientific Soul-Searching

As a result of this scientific perspective, I have a difficult time blindly accepting what many call “spiritual truth.” The sorry state of the impoverished world—often victimized by seemingly false if not evil spiritual beliefs—troubles me. I shudder when I think of the millions of men and women killed throughout the last one thousand years of history because they simply failed to follow the current religious (usually politically based) beliefs of the people surrounding them. I feel somewhat envious of nonscientists who appear to have great spiritual wisdom and a special frustration with my scientific peers who seemingly fail to appreciate the mysteries contained in physics.

Scientists frequently use words such as *soul* and *God* in their book titles (often in big bold letters) to attract readers, but these words are rarely defined, scientifically or otherwise, and the important human issues dealing with these concepts are equally rarely discussed. In fact, one of the major themes of this book is the

failure of scientists to ask the right questions—those that lead directly to answers concerning our vital and precarious human condition.

Instead, scientists lead readers down the well-trodden paths of objective inquiry—what I call the wrong questions. Even though these wrong questions are answered correctly, soon enough the reader gets lost in descriptions of neurophysiology and the like.

I can't stress enough the importance of the questions themselves. Accepting answers to the wrong questions can lead to spiritual isolation, a feeling of depression, and to a sense of pointlessness to life and to the existence of the universe.<sup>2</sup> I call this feeling *soul-loss*. I see it as the general malaise of Western civilization—the loss of a sacred sense of life.

But finding the right questions is not easy. The sacred soul does not possess objective qualities in the same sense as a baseball possesses mass or energy. Thus what can science ask about it? I hope to convince you that the soul is just as real as these baseball qualities. In fact, I shall present rational, science-based reasons for its existence in spite of its apparent nonmateriality (and lack of objective qualities) and offer reasons for remembering your soul in everything you do. To prove the soul's existence requires us to find out what the soul is—to come to some agreement on its definition.

Science is not normally interested in nonmaterial, seemingly mysterious, things. At least most scientists do not seem to be concerned with them. I understand why scientists fail to involve themselves with these mysteries. Such things are exceedingly difficult to deal with, and sometimes result in the investigator's giving up previously held shibboleths, particularly those questioning the foundations of science. History has taught us that we painfully clutch our ideas of right and wrong, life and death, good and evil, in order to maintain order in our lives. Yet the result of our clutching often leads to emotionally polarized minds and unfeeling hearts.

Hardly a day goes by when questions concerning the soul's existence do not enter the political, moral, and spiritual arenas. Often, science gets into the spiritual fray. The well-known Scopes trial about the teaching of creation versus evolution in schools comes to mind. The effects of that debate are still felt in our classrooms. No longer can sacred or spiritual matters even be discussed for fear of upsetting parents' closed minds.

Today we again watch as science enters a difficult arena dealing with the creation of life and the maintenance of life-support. Because these are difficult times, people may, with hope in their hearts, turn to science to solve these problems. But, science usually takes the “heart” out of the soul by discussing it so abstractly and so materialistically that we lose the focus of our concern and find

ourselves mulling over the wrong questions—the objective inquiries—and even though we may find answers to these questions, they are not the questions we really wanted to ask.

The soul is not an easy subject to deal with either scientifically or spiritually. If I were scientifically ignorant and spiritually wise, this book would be an easier task. But I'm not and it's not. So why do I try? Because a new and original scientific look at the soul is important today. Indeed, the idea of the soul is perhaps the single most significant concept of our time: one that needs a current, scientifically relevant and heart-centered spiritual view.

We need only to turn to today's headlines to see why. For example, abortion is a major concern for our society. During the writing of this book, Planned Parenthood clinics were bombed and shot at by right-to-lifers, while Catholic churches were picketed by pro-choicers. The debate about abortion, the rights of the fetus, and the rights of the mother is not easy to resolve. The issue concerns whether a fetus is a human being and therefore has a soul. The link of the soul with the fetus has not been made by either side. It is as if each side tends to avoid the question of soul presence. Both sides deal with the issue as blind individuals feeling an elephant and drawing different conclusions based on feeling different parts.

If the soul exists, then when does it begin to exist? When does a fetus become a soul? At conception? At three months? At six months? At birth? And, if the soul does not exist, what does come into existence at conception or during these other stages of gestation?

At the other end of the spectrum, issues about the right to prolong life with medical life support continue. When should a person be taken off life-support? After three days, six days, several months? And what about capital punishment? If we knew what happens to a person at death, would we still condemn prisoners to the death penalty? Suppose that killing a condemned man is shown to produce negative karma and ultimately be the cause of more violence in the future? Suppose we could prove universally that violence begets violence as the Bible says?

Consider children born with lifetime disabilities, some of them without any sign of consciousness. Would we, as a society, feel freer to allow these children to die moments after birth, if we had a perspicacious view of the soul?

Without a new, enlightened scientific view the soul may disappear into the lost pages of propaganda and history, leaving us to wrestle with such issues in the dark. Even worse, suppose we have souls and, because they are often represented as medieval entities, simply do not regard them as real or important. Without a new view we may be in danger of losing our souls, if we haven't already. Worse still, if we continue to ask the wrong questions,

putting the soul outside the scientific realm or taking it apart mechanically and without feeling, in spite of finding answers, we may be left hopelessly morally adrift.

## The Mystery of the Soul: Can We Find a Scientific Solution?

Some of you might ask, why bother looking for a scientific solution to the mystery of the soul? Isn't science to blame for this soul-searching? Isn't our present soulless malaise—the loss of a sacred sense of life—being caused by science? Isn't science responsible for our present soulless condition? Why, then, should we ask it for answers?

I agree that science, at first glance, may appear to be the worst place to go for answers about the soul. But we shouldn't be too hasty in rejecting it. In our journey to find a more informed basis for the soul, we may find some heartening surprises, provided we look at our findings in a new scientific and spiritual manner.

You see, science itself is undergoing a major shift in its understanding of matter and mind and is now attempting to deal with what were previously thought to be arcane subjects. As I mentioned, many books are appearing on the search for a scientific basis for God and the human soul. As we explore the science of soul-searching—that is, searching for the soul—we will see that several have taken this path before us with a scientific bent in mind. The list includes Aristotle, Thomas Aquinas, Isaac Newton—but this is not a surprise, no?—and even the ancient Egyptians. Today, you will quickly see by perusing the latest books about the overlap of science, God, and the soul, that most if not all of them attempt either to explain away the soul as a material process, missing its essential points (that it is sacred and immortal) and its essential purpose (that it is necessary for consciousness to exist) or never discuss it at all in spite of the promising book titles.

To make these essential points and to show the soul's essential purpose is the task of this book. I will show what is missing in earlier scientific explanations and once and for all put the soul, as science attempts to put consciousness,<sup>3</sup> into a scientific and spiritual light.

### A “New Physics of the Soul”

Until very recently, science concerned itself with defining the universe's attributes as objective processes. Little attempt was made

to consider subjective processes as they are. As we near the end of the twentieth century, science again is attempting to define consciousness as a phenomenon emerging from simpler physical processes. The greatest effort seems to be aimed at answering what I consider to be the foundation of all the wrong questions: namely, how does the self-aware entity emerge from deeper and more elementary physical processes? The answer is it doesn't, and that is very difficult to deal with in today's reductionistic science.

My aim is to set up a "new physics of the soul." In it I will show how the soul, the self, matter, and consciousness are, although related, not equivalent. Present science, based on models generated from Aristotle's vision and later developed with the aid of Newtonian mechanics, led us on the wrong reductionistic and materialistic path. It incorrectly reduced the soul and consciousness to purely physical and mechanical energy. At best the soul appeared as an epiphenomenon generated by material processes. When we bring quantum physics into the mix, the error becomes apparent.

Instead we will see the soul as a process involving *consciousness of knowledge*. This process occurs in the vacuum of space in the presence and absence of both matter and energy. From this new vision we shall see why the soul is immortal. This new vision means that the soul had its beginnings when the universe of space, time, and matter first appeared and has its ending when the universe returns to the nothing from whence it came. The major activity of the soul is manifestation of matter and energy and the shaping of the material world by knowledge. Both manifestation of the world and the soul's knowledge of it are tied to quantum physics principles, specifically the observer effect and the uncertainty principle.

The vacuum is fundamentally unstable. Anything that comes into existence did so through the soul's desire to manifest. This desire governs both the appearance of all matter and the relationship of a unified consciousness to matter through the effect of observation spelled out by quantum physics. Thus the soul cannot be seen either materialistically or reductionistically. In fact the soul cannot be seen as a mechanical physical thing at all. The soul's fundamental purpose is the shaping of knowledge into material form.

## What Is Interesting and Original About This Book?

In answering the above question I leave contemporary science's search for the material basis of consciousness and self-awareness and offer a new and original concept. I wish to show that *the self is fundamentally an illusion* arising as a reflection of the soul in matter, much as a clear lake at midnight reflects the moon. At the same time, *the soul is not an illusion*, although it is a reflection of

spirit. (I'll define what I mean by spirit shortly.) One goal of the book is to show how the concept of self differs vitally from the soul. To do this will require us to venture on a journey of soul-deconstruction and reconstruction, moving backward and forward through time and history.

This tour provides a new vision of an “empty vacuum,” and a new realization of how the apparent picture of multitudes of mortal souls is also an illusion and that the “one eternal soul” with “one eternal consciousness” is a fundamental reality. The pre-quantum or Newtonian picture of the vacuum is simply the non-presence of matter. Long before modern physics, however, a vacuum was seen by ancient philosophers as the potentiality to become anything. It turns out that this ancient view has more in common with the quantum physics view than does the Newtonian mechanical picture. Similarly, our present Western spiritual vision of soul shows that each individual has a soul with a single isolated consciousness. I will endeavor to show that all these nearly countless, separately conscious souls are illusions, reflections of one soul with singular consciousness lasting throughout the span of time our universe persists.

But proving this will not be easy. The relationship between the self and the soul is a mystery and will remain a mystery even if I succeed in explaining it. To understand what I mean, consider the fact that the speed of light is constant for all observers, regardless of how fast they are moving. That is also a mystery, but it has been explained quite well. We know why the speed of light does not change, but when we observe the experimental consequences of it, we are still in awe that nature plays the game it does by allowing space and time to bend to accommodate light's steady speed.

As another example of explainable mysteries, consider that matter does not consist of atomic and subatomic bits of stuff moving in well-behaved patterns as larger chunks of matter apparently do. Matter plays with our knowledge and theories in a game of hide-and-seek we call the uncertainty principle. That there is a principle of uncertainty governing the behavior and existence of matter and energy is a mystery that fills textbooks on modern physics.

We should not forget that in spite of the explanations of science's greatest mysteries, quantum theory and relativity, these remain mysteries. They are awesome and marvelous, because no one knows why the world is made this way. It should be the goal of science to reflect on the mystery of the soul, in much the same way that science considers the mysteries of modern physics and even delights in them.



## *What Is This Big Mystery of the Soul?*

There are many soul-mysteries, as the amusing lyrics at the beginning of the chapter indicate, in spite of the many books written about it and our present-day rationalism. Science in the twentieth century has seemingly not helped us to regain our ancient popular belief concerning our souls: namely, that our souls are immortal and capable of living in one form of paradise or another even after our bodies have long decayed. I suspect that most people believe in an immortal soul in some form.

We who are not scientifically or academically trained may believe in an immortal soul, but then science intervenes and awakens us from our blissful daydream. According to a recent article by philosopher Michael Grosso, a huge split exists between mainstream America and the scientifically educated in belief in the soul and an afterlife.<sup>4</sup> For example, since 1912 behaviorists, in their attempt to establish psychology as an equal science to physics, struck the term *soul* from their dictionary. This admonishment was felt throughout all Western materialistic science. Anything having to do with a soul was suspect and not to be used by serious academic scientists.

Nobel Laureate physicist Francis Crick offered an “astonishing hypothesis” that our souls are nothing more than our bodies.<sup>5</sup> According to Crick, the soul somehow arises from the complex interactions between the multitude of neurons making up our nervous systems and brains. I agree that if this is true, it is astonishing.

Think about it. Out of the mud and soil, living souls, like so many plants arising from seeds, pop up. But, if this is true, I feel somewhat disheartened, as if I have lost something that will never be returned. It is like being told the truth about the tooth fairy that left quarters in place of my baby teeth under my pillow at night. Can science provide another view besides Crick's? Or does science need to change in order to accommodate what we mean by spiritual truths?

## *The Difference Between Soul and Self*

Whether or not we believe in our souls, we certainly sense that we each possess a unique being inside our skins. We call this entity the *self*. The Moody Blues song, parodying Descartes, says it all: “I think. I think I am. Therefore I am, I think?” Each of us is aware that he or she is aware. We are aware that we all are aware. Even more, we are aware that we are responsible for our lives and even

the lives of others. This responsibility that we may call the “essential goodness of humanity” is reflected to us by the incessant knowledge of our own mortality. We know that our actions can heal, harm, enliven, or destroy other life-forms. In brief, we are aware of our souls because we are aware of our impending deaths and our sense of “goodness.”

It is this *dual awareness* that concerns me. Unlike other scientists who write about the soul but miss these essential points of the mysteries of death and goodness, I wish to address them directly. Is the soul just another word for the *self*? Or is there something fundamentally different about it? What happens to the self at death if it differs from the soul? Does the soul or the self continue and reincarnate at some future time? More questions! Will science come to our rescue, or are we doomed to face our souls with nothing more than poetic metaphor to soothe us?

### *The Soul Is a Virtual Process and Not an Entity*

I propose a new vision of the soul here, one that explores many of our earlier concepts in light of the tenets of modern science, particularly based as this vision is on the existence of an “intangible, irreducible field of probability”—the quantum physical wave function, from which all physical matter and energy arise.<sup>6</sup>

Many, ranging from modern scientists to perhaps the Buddha, introduce great confusion into the search by not differentiating between spirit, soul, and self. Based on my research, the spirit appears to be virtual vibrations of vacuum energy; the soul turns out to be reflections of those virtual vibrations in time (I’ll explain what a virtual process is momentarily); and the self is an illusion arising from reflections of the soul in matter, appearing as the bodily senses as suggested by the Buddha. Hence the three are related but essentially different.

The quantum wave function demonstrates what I mean by a *virtual* process—one that has an effect even though it is not a result in fact. Thus this wave function, although never measured, has extremely important physical consequences. The soul arises alongside this intangible field of probability—as *virtual processes* in the vacuum of space. These processes appear much like reflections of so-called real processes occurring in everyday life. However, these virtual processes have a life of their own, and even though they are never observable themselves, they account for even the simplest things that we do observe.<sup>7</sup>

In other words, the soul is a virtual process and not an entity. Without it, there is no awareness of entity. Here is an analogy: I

believe the soul involves us in a manner similar to the way virtual processes involve the ordinary processes of material existence. We know that in quantum physics, virtual processes are extremely important. An example of this is whenever light scatters from atoms or molecules, such as in the everyday occurrence of sunlight scattering from air molecules and producing the blue sky of the heavens. Here virtual electronic processes are involved.

Consider what the electrons in air molecules must do to accommodate this fact. It is fantastic. When light scatters from an atom, each atomic electron excites itself by literally absorbing energy from the light, even more energy than the light contains! Each electron also moves away from that atom in incremental steps from just a few atomic dimensions to an infinite distance all the way across the galaxy! Then each electron makes the long journey back to where it started, again in incremental steps, giving back all of the energy it had absorbed from the light. In the end, the debt of energy is paid back and the light is re-emitted in a different direction from whence it came.<sup>8</sup>

All of this takes place in literally no time at all as a virtual or *imaginary* process. It appears to the outside world that a particle of light has simply scattered from the atom with no change in energy at all and no obvious escape of electrons from the atom. Yet without all of that going on, it is impossible to account for the scattering pattern of light observed when light interacts with any atoms or molecules. In other words, the sky is blue because electrons take virtual journeys to heaven and back! So do we in the process of reincarnation. But I'm getting ahead of the story.

## From the Wrong Question to a New Understanding of the Soul

We began our inquiry into the existence of the soul by pointing out, as many of our forebears have done, that the soul is not an easy topic to discuss intelligently. Is the soul material or an illusion? This natural question introduces a gap separating modern science and current spiritual thinking and leads to the split situation we presently find ourselves in. We are led to see material things as real and spiritual things as beyond matter. To find the right trail, we need to retreat to where we lost the scent.

As we move both backward and forward through history these two visions of the soul continually present themselves. At times the soul appears as if it were something quite physical, like an attribute of an object such as its color or its organization. At other times it takes on a deeper, emotional sense, even a feminine form. One is

tempted to regard these two visions as scientific (the soul is material) and spiritual (the soul is imaginal), but this turns out to be an error resulting from our asking the wrong question.

The split in visions of the soul started with early Greek civilization. Plato saw the soul as ideal while Aristotle saw it as material. In Plato's *Phaedo*, Socrates clearly characterizes the soul as invisible and yet able to sense the perfection of equality, beauty, goodness and other "perfect" attributes. The material body was seen as imperfect, with fuzzy or imperfect memories, whereas the immaterial soul was seen as perfect and capable of faultless memory. For Plato, the soul was closest to a virtual or imaginal process, while for Aristotle the soul was completely physical and even composed of a fine material, like some form of gossamer.

After considering Aristotle and Plato, we retreat in time to the ancient Egyptians and Chaldeans. This is the place in time when the split doesn't yet exist; the absolute void contains the undivided spiritual and physical universe and provides the origin of all things ethereal and material. Starting there, we deconstruct the old soul and begin to reconstruct a new soul model incorporating quantum physics.

The next step in resolving the conflict between the materialist and spiritualist view of the soul is consideration of the soul's relation with the whole universe. Here we look at the possibility of the soul existing as a computer program at the end of time. This nonphysical model of the soul leads us back to the vacuum where we investigate how the soul could be nonphysical and yet real at the same time. This takes us to the original step in defining the new soul: finding the difference between the self and the soul.

Next, we go to the Buddha's mind concerning the nonexistence of the self and soul. We find the soul not only able to depart from the body, but also from the world of possibility as it disappears altogether, like a magician's illusion. This denial of the soul by the Buddha actually helps explain how the soul can be fooled by itself, and it leads to some original insights into how the soul can become addicted to matter, even polluted by the body!

Then we march forward to modern science's view of the universe. Balancing new with old, we find a scientific view of heaven, hell, immortality, reincarnation and karma. This leads us to see the soul as an essential unified entity despite the large number living upon the earth today. Finally, we learn how the soul speaks to the body and, in the last chapter, how the soul, spirit, self, and matter are all related.

It is my desire that through my attempt to bring the soul concept into the modern scientific age, the old problem of human existence may actually find a solution. From this research and my new model, I believe that I can convince you that although the self disappears at

death, the soul continues forever. The real question is how can we bring that awareness into the light so the essential goodness of humanity is continually reflected for all time?

## CHAPTER 2

# Aristotelian Soul Physics

*What quantities are observable should not be our choice, but should be given, should be indicated to us by the theory.*

—Albert Einstein

*In my soul rages a battle without victor.  
Between faith without proof and reason without charm.*

—René Sully-Prudhomme, French Poet  
*La Justice*

LET'S LOOK AT JUST WHAT is at stake here. The problem is, honestly, what are we looking for? To determine a scientific basis for the soul we need to consider just what we mean by the concept of “soul.” Although it makes good scientific sense to do this, it is a difficult task. We need a well-defined conceptual theory before we can investigate the facts. This much we owe to Einstein, who reminded us that the theory tells us just what we can observe about the universe. So let's look at some theoretical attributes of the soul.

Physics is based on just three concepts: space, time, and matter. So it is natural to ask how the soul could be measured using these three concepts. In other words, let us ask about the soul's material content and its dynamics. For example, does the soul move in space and time? Does it exert pressure? Does it have physical weight or mass? Does it have any other measurable attribute?

As interesting as such questions are, they are misleading. And to see why such questions mislead us, it is important to see how ancient philosophers dealt with the materiality of the soul. As the ancient Greek philosopher Aristotle might have done, here we shall look at the soul's ability to cause action in the body, to move it about. Aristotle, using logic, was the first to attempt to determine the physics of the soul. Consider, as an exercise in Aristotelian analytical thinking, how we might define the soul using terms from physics. As we shall see, many metaphors are necessary to outline any concept of the soul.

## What Is the Soul?

Most people, if you ask them, would probably say that the soul is not material, not made of substance. Many would suggest that because of this trait it makes no sense to look for the soul as one looks for a seat of consciousness in the brain.<sup>1</sup> What are we looking for? If it isn't a material substance, then how can we find any scientific evidence of it? On the other hand, if physics is based on time, space, and mass, isn't it a contradiction to look for the soul if it is nonmaterial? Does scientific investigation ever deal with the reality of invisible or nonmaterial *stuff*? Although to many people it may not seem to, including even some scientists, the answer is yes.

### *Do You Have a Magnetic Soul?*

Consider the simple experiment of sprinkling iron filings on a sheet of paper beneath which lies a bar magnet. I'm sure you remember the pattern the filings make on the paper. Although randomly scattered on the paper, they neatly form into gracefully curved lines, arching from the magnet's north to its south magnetic pole. This pattern tells us the bar magnet has a magnetic field surrounding it. Is that field massive? Does it have weight? Can we see it? Well, no light reflects from that spatial field, so if it's there, it's invisible. We need the filings to see its existence. Nor does that field have any weight or mass, although it moves objects through space or stops them from moving altogether, as if it were massive. It literally can move a mountain or lift a train above a track. Remember this fact as we consider the soul theories of Aristotle and Aquinas.

But if we didn't know what we were looking for, namely, a magnetic field in space, we wouldn't have suspected that tiny iron filings would make the presence of the field known. Perhaps we should consider the evidence for the soul in a similar manner. Where do we look for evidence? What are the iron filings showing the soul's existence? For Aristotle, the filings are the body itself while for mystics and spiritual leaders, the answer is in the domain of spiritual values.

### Spiritual Evidence? What's That?

What do I mean by spiritual evidence? The soul is often referred to as the spiritual part of a human being, distinct from the physical. As a spiritual part, it is often believed to survive death.<sup>2</sup> From a moral aspect, a soul can be either good or evil. Consequently, the soul is

subject to happiness or misery not only in its present life but in its life to come. It is even possible for the soul to move from death of the body in the present to the past.

This latter sentence may throw the reader. After all, many of us think the soul moves through time toward the future on an evolutionary path. It would seem contradictory, then, to imagine that the soul would go back in time. But, consider that the soul is ethereal and could move faster than light, as quick as a thought. If the soul is not material,<sup>3</sup> it would certainly be able to do that, for what would slow it down? Given this penchant for speed, and taking into account the modern theory of special relativity that predicts faster-than-light objects<sup>4</sup> moving backward as well as forward through time, we come to the conclusion that the soul, if it is nonmaterial, should be able to move both ways through time. (In [part 4](#), we will consider why a soul would ever want to do that.)

The nonmaterial soul is often thought of as the disembodied spirit of a deceased person. Massless yet contiguous, it maintains integrity, somewhat like a magnetic field. But unlike a static magnetic field, in this view it doesn't vanish when its material source disappears. If you annihilate the bar magnet, the magnet's field also vanishes. Many materialistic thinkers, who also give credence to magnetic fields, believe if the soul exists at all, it exists somewhat like the bar magnet's field. The vanishing of the magnetic field after destruction of the magnet is the same as the extinction of the soul after death of the body.

Perhaps the soul is like a magnetic field, but not as produced from a bar magnet. Instead, I believe it is like the magnetic field arising from a photon<sup>5</sup> or particle of light. Such a field needs no material source for its existence. The mere propagation of the photon through space generates an ever-changing twisted pair of snake-like electric and magnetic fields that continually give and take energy from each other. Perhaps this metaphor also applies to the out-of-the-body soul in its relationship with the body.

## *The Emotional Soul*

The soul is also the emotional part of a human being's nature, the seat of a person's feelings or sentiments. In our everyday dealings we instinctively regard each other as separate souls somehow living inside of bodies. The soul is thus thought of as the essential *irreducible* element or part of ourselves. Some think of the soul as God. (Indeed, the question of the continuity of the soul with God as presented in the idea that all souls return to God is important, and we shall look at this later.) In African-American culture “soul”



pertains to music. One refers to another as having “soul” if they have feelings of familiarity or empathy with the culture. In the culture at large, we often sense our souls only when we are in a spiritual environment as felt in worship or heard in gospel music.

## *The Feminine Soul*

The word *soul* arises from the German word *Seele*. According to feminist author Barbara Walker, the word originally arose as a feminine noun (hence *die Seele*) and was used by mystics like Meister Eckhart and Goethe in the same sense as *shakti* in India means the “ultimate feminine reality.”<sup>6</sup>

Many of the ancient words for “soul” were also feminine. These include *psyche*, *pneuma*, *anima*, and *alma*. God-souls were Goddesses such as Kore, Sophia, Metis, Sapientia, and Juno. Ancients believed every human had a female soul derived from the Mother Goddess through the earthly mother.

Why this emphasis on the femininity of the soul? Perhaps it is a reflection of the nurturing aspect of humanity that is often overlooked, particularly in male-dominated societies. But perhaps something equally scientific and spiritual is implied here. We know all fetuses begin life as females. Male genitalia develop later during gestation. And if we consider certain aspects of ancient Egyptian and Hebrew mystical sources, such as the Egyptian Book of the Dead and the Qabala (also written Kaballah or Cabala), we find that the femininity of the soul has much to do with the feminine principle of structure and creation. Thus the soul's femininity is connected to the feminine principle of magic and creation. (I'll share some greater insight into the sexuality of the soul in [chapter 7](#) where I deal with the question of the meaning of Adam and Eve.)

## *The World-Soul*

There is another sense of the soul we shall touch on here. Rabindranath Tagore once wrote:

That which oppresses me, is it my soul trying to come out in the open, or the soul of the world knocking at my heart for its entrance?

Many mystics consider the soul to be more than a personal Jiminy Cricket inside each individual. They ask us to look out in the

world, out in the heavens to see our essential souls. It is not our inner soul that hungers but something outside of us desiring to come in.

Is there more than one soul, or are all souls part of a single world-soul? Maybe the soul inside you and the soul inside me are simply reflections of one soul living in the world of humanity at large—perhaps even in the universe at large. The whole notion of *inside* and *outside* may not apply to the soul as simply as it applies to the body. Certainly our hearts and livers lie within our skins, although there are some exceptions even to this rule. But the soul may not obey this simple dictum. Maybe we ignore the world soul and must continue to reincarnate because we fail to recognize this. If the soul is not confined to spatial or temporal boundaries, then my soul is your soul is the only soul that ever is or ever was or ever will be. If this is true, then what is a soul? (We will return to the accountability of the soul in [chapter 12](#).)

Having briefly explored the spiritual evidence of the soul, including ideas of soul magnetism, the emotional and feminine states of the soul, and the notion of the great world soul, concepts that provide hints to discovering evidence for the soul's existence, let's next look at how the ancient philosopher Aristotle attempted to describe body and soul as a material physical process.

## Aristotle: The Soul Is the Principle of Animal Life

Aristotle realized that there is much difficulty in finding soul evidence. Distinct from Plato's idealistic and perhaps mystical view, which we will examine in [chapter 3](#), Aristotle did not separate the soul from the body, and yet he did not equate them. For him, the soul was that by which we live, feel or perceive, move, and understand.

### *Hard to Answer Questions About the Soul*

In *De Anima* (On the Soul), Aristotle attempts to make it clear that any assured knowledge about the soul is one of the most difficult things in the world to obtain. As discussed in [chapter 1](#), the kinds of questions we ask about the soul must be carefully considered. Asking “What is the soul?” requires us to consider how many different ways there are to answer the question. Is there a unique method for answering the question?<sup>7</sup> Does the soul exist as potential or as actual substance? Is the soul divisible or is it without parts?

Perhaps the soul exists not as a plurality of entities but as a composite of parts of one single entity. Should we then look at the functions of the parts of the soul—thinking, sensing, feeling, and so forth—or should we consider what is being thought about, sensed or felt, that is, the action as a cause of these parts arising?

Just as above, Aristotle raised many hard and valid questions in his model of the soul as the principle of animal life. Aristotle pointed out that when one honestly inquires into the subject, particularly with questions about the physicality of the soul, one is necessarily led to the question of the soul's existence.

### *No Soul Without a Body?*

In no case can we see evidence of the soul without involvement of the body. If our souls move us emotionally, then certainly our emotions as well as our senses seem to fully engage our bodies. If our souls are based on our minds, then perhaps thinking is the outstanding exception. It seems not to involve the body; while we think, there appears to be nothing going on. But modern physiology indicates that even thinking involves the movement of signals within the brain. Thus thinking, too, requires a body as a condition of the existence of thought.<sup>8</sup> If there is no case in which we can see the soul distinct from the body, we would conclude that the existence of the soul apart from the body is not possible.

From this argument it sounds as if Aristotle is saying that the soul is the body. But, as he carefully explains, this is not the case. He says there is no evidence of the soul without the body. Before we go into Aristotle's arguments more fully, let us look at how Saint Thomas Aquinas dealt with the issue of the body and soul conflict by basing his thinking on Aristotle's concepts. Then we shall return to Aristotle who believes the motion of the body, as an action of the soul, is evidence of its existence.

### **Body and Soul As Viewed by a Saint**

Thomas Aquinas was a Dominican priest by trade and a medieval philosopher by predisposition. He was born in Italy in 1225. In the *Summa Theologica*, he wrote about the spirituality of the soul rather extensively. Father Aquinas was also quite concerned with defining the physical aspects of the soul. For example, he asked: Is the soul just another form of the body? He carefully reviewed and then refuted both the idea that the soul was nothing more than a form of matter and the idea that the soul was a body by examining the

following propositions:

1. The soul is that which moves the body of a human being. Let us take that as given.
2. Anything that moves another body must itself be a body and partake in motion. Bodies by fiat move or “possess”<sup>9</sup> motion. Motion without a body appears to be unthinkable. Only that which has the ability to move can be called a body and only that which has this ability can move another body. In other words, if it moves another it must itself possess the ability to move and it also must move when it acts on the other body. In this argument he anticipated Isaac Newton's law of action and reaction, which appeared four hundred years later.

### *The Argument for the Material Soul*

Let's look carefully at the two arguments presented by St. Thomas. In Aquinas's time, one first presented the case for the opposition and then the case for the plaintiff. Accordingly, St. Thomas presented the opposing argument that *the soul is nothing more than the body because that which moves a body is another body itself*. Thus in regard to the ability of the soul to animate the body, he said that *nothing can give something that it doesn't already possess*. For example, a fire cannot give heat unless it already has the ability to produce heat. And so a body cannot move unless it already has the ability to move. Thus anything that creates or produces motion must already have the ability or possess the ability to move.

Inert bodies such as rocks can move and therefore possess the ability to move. Accordingly, such bodies must be moved by external sources which are also bodies. One rock falls against another and we have a landslide. But when looking at animals, including ourselves, we attribute that motion to something we do not see directly: our souls. However, the “soul” must be only a different name for the body's ability to move itself. Since the soul is a mover of the body, we conclude therefore that in spite of being invisible, souls are also bodies. Furthermore, between a mover and that which is moved there must be some form of contact. Contact can only take place physically, so if the soul is mover of the physical body, the soul must also be a physical, albeit invisible, body.

## *The Argument for the Immaterial Soul*

Next, Aquinas refuted the above opposition position by presenting an argument that Aristotle gave in volume 8 of his *Physics*, more than one thousand years before. Known as the prime mover argument (which we will examine later in the chapter), it states that not all things capable of moving objects are necessarily themselves physical things occupying space or existing within time as all physical bodies do. In the light of modern physics, we shall be tempted to dismiss this argument based on Aristotelian thinking as faulty. But the argument still makes sense today.

Although Aristotle's model of the known elements (earth, air, fire, and water) and the tendencies of these elements to seek their natural place (which result in the arising of forces and motion of things) has been replaced by Newton's vision of the physical universe, there is, strangely, something very modern in Aristotle's prime mover argument regarding the nature of motion itself. According to Albert Einstein's theory of relativity and our present concept of fields, motion, and the causes of motion of a body are not necessarily driven by contact with other bodies. Something can possibly move without being aided by another physical body touching it, and motion can even take place when there is no other body in contact with it.<sup>10</sup> Thus if the soul is taken as the prime mover of the body, we could conclude that the soul itself is not also a body.

### Body and Soul As Viewed by Aristotle

Using a form of debate popular during that day, we saw how Aquinas first set up the argument that the soul was a body because it was impossible for a physical object to be moved by anything but another physical object. Then, Aquinas offered his Christian view which refuted this, appealing to Aristotle's old allegation, the prime mover argument, that stated it was possible for a nonphysical thing to move a physical thing.

The problem we address here is the physicality of the soul. Although Aristotle's argument is based on the notion of an immovable mover, it hints there is more to the universe than matter's presence causing other matter to move. The big question is whether some form of intelligence or willful intent apart from the material body is meaningfully connected to it and capable of separating from it. Or, in other words, can a mind exist without a body? Aristotle argues that the mind cannot exist without the body, but, somewhat paradoxically, that the mind is not the body.<sup>11</sup>

Aristotle makes it clear that the soul is not related to the body in terms of conventional thought. For example, the soul is not just another mass fitting inside the body or an outside mass pushing or pulling on the body. Nor is the soul a spirit imprisoned in the confines of the flesh as if it were inside a cage. It is also not a movement of some thing or pure movement in itself. And it is not measurable by number; the soul cannot be counted nor can it be divided into parts. All parts of the soul, if we think of the soul as if it were divided, would be present in each and every physical part of the body.<sup>12</sup>

### *The Soul Is a Special Substance*

In spite of its seemingly otherworldly qualities, the soul is very real for Aristotle. It has substance, or, better put, it is substance of a rather special kind. This substance is real, but it is immovable. It is a base substance, yet it is not ordinary matter, which is subject to movement and to forces. Even though the soul *does not move*,<sup>13</sup> the soul has power to determine and control the actions of the body. Until the soul makes an effort, these actions are only potential: the body remains potentially active and actually inert. After the soul performs, these actions are factual: the body is potentially inert and actually moving. The body for Aristotle is a large mass of *potentia*, nothing without the soul except the potential to take actions dictated by the soul—this otherworldly, nonmoving substance.

### *Potential and Actual*

Aristotle goes further. The soul is the first or primal level of actuality. Things get confusing here as Aristotle develops the ideas of *potential* and *actual*. The soul is *always* active, thus always an actual substance. The body can be both actual and potential. When it is active and therefore actual, it is moved by the soul substance. When it is potential, it is not moving, thinking or doing anything. It is inert or even dead.

Aristotle believed the soul and the body interrelated in a complex manner involving overlapping levels of potentiality and actuality. We might draw them as in [figure 2.1](#).