7

CONTENTS

Prologue	1
Acknowledgments	5

Chapter I. Where Do We Come From?

The origin of the universe is described differently in scientific cosmology, in the literal and Gnostic interpretations of Genesis, and in the creation hymn of the Vedas. The story of Abraham and Isaac illustrates both the problems and benefits of scriptural interpretation. Evolution through natural selection provides a compelling explanation for the present state of life on earth. The human anatomy shows structures that cannot easily be explained by a separate creation. The theory of evolution is nevertheless still a work in progress. Issues concerning purpose and the special nature of human consciousness are yet unresolved. Human beings differ from other animals in their highly developed ability to create new solutions for old problems and to store and communicate information. The chapter concludes with the idea that we must create our own interpretations of how to interact with the forces that made us who we are.

1. In the Beginning

(i) Origin of the Universe (Big Bang)	7
(ii) So Many Years Ago (Radioactive Dating)	11
(iii) Scriptural Views of Creation (Biblical Time)	14
(iv) Being and Non-Being (RgVeda's Creation Hymn)	21
(v) Perfect Place (Fine Tuning)	23
(vi) Alphabets of Creation (Aleph Bet and Alpha Beta)	26
(vii) Word without End (Evolution of Logos)	27
2. Creation of Man	
(i) Multiple Beginnings (Creation Myths)	31
(ii) Versions of Eden (Genesis and Gnostic)	33
(iii) Hermeneutics (Interpreting Texts)	36
(iv) Abraham and Isaac (Meaning of the Akedah)	38
(v) Inventing God (Voltaire and Feuerbach)	46
3. Natural Selection	
(i) Beginning of Evolution (Darwin and Wallace)	48
(ii) Indelible Stamp (Recurrent Laryngeal Nerves)	51

(iii) Evolution of Theory (Embryology and Genetics)	55
(iv) Creativity without a Creator (Random Changes)	57
(v) Pleiotropic Possibilities (Spandrels of San Marco)	61
(vi) Vestiges of Lamarck (Lysenko)	63
(vii) Intensional Interpretations (Fodor and Piattelli-Palmarini)	65
(viii) Explanations and Laws (Just-So Stories)	68
(ix) Complexity and Design (Intelligent Design)	70
4. Darwin's Children	
(i) Punctuated Equilibria (Hopeful Monsters)	72
(ii) Special Species (Evolutionary Psychology)	73
(iii) Sexual Selection (Peacock Tails and Human Nature)	77
(iv) What Makes Us Human (Brain, Language, Culture)	80
(v) Contingencies (Humanity Happened by Chance?)	85
5. Whence?	87

Chapter II. What Is This World We Live In?

The conflict between science and religion is introduced by the story of Galileo. Science proposed that we should determine what is real by considering the empirical evidence rather than by literally interpreting the Holy Scriptures. This point of view has prevailed for our understanding of the material world. However, there are limitations to empirical knowledge. Since inference involves as much conjecture as deduction, scientific theory is never absolutely certain. Colors illustrate how our perception of reality is determined by the physics of the world, the physiology of our senses, and the experience of our culture. Quantum physics has bought us face to face with a level of reality that cannot be completely predicted. Subatomic particles are not separate from each other and show differ characteristics depending on how they are measured. Nevertheless, there is an order at the heart of things, without which there would be neither science nor religion.

1. And Yet It Moves

(i) Nature's Book (Scripture versus Science)	91
(ii) Physics and Poetry (Giordano Bruno)	95
(iii) Music of the Spheres (Copernicus and Kepler)	97
(iv) Mutability of Heaven (Intransigence of the Inquisition)	98
(v) Creating Theory (Methods of Science)	102
(vi) Play of Science (Brecht's Life of Galileo)	105
(vii) Separate Magisteria (Church and Galileo)	107

91

2. Rise of Empiricism	
(i) New Atlantis (Bacon)	110
(ii) Nature's Laws (Newton)	111
(iii) Process of Induction (Conjecture and Testing)	114
(iv) Carving Nature at Its Joints (Categories)	118
(v) Dreams and Doubts (Skepticism)	120
(vi) Interactions between Thought and Experience (Sokal's Hoax)	121
(vii) Ontological Uncertainty and Epistemic Anxiety (Constructivism)	126
(viii) What Is Real and What Is Not (Arguments from Illusion)	128
(ix) Such Stuff as Dreams (Chuang Tzu, Shakespeare, Calderon)	132
3. Let There Be Light	
(i) Qualia (Locke's Secondary Qualities)	135
(ii) Rainbow Colors (Newton's Spectrum)	138
(iii) Trichromatic Cones and Opponent Neurons (Visual Physiology)	142
(iv) Color in Context (Color Interactions)	146
(v) Ecology of Color (Evolution of Color Perception)	146
(vi) Color Names (World Color Survey)	148
(vii) Nature of Color (Reflectance and Dispositions)	153
4. Light of Reason	
(i) Enlightenment versus Revelation (Supreme Beings)	157
(ii) Old Gods in New Worlds (Speech Delivered by an Indian Chief)	159
(iii) No More than This (Naturalism)	160
5. Veiled Reality	
(i) Uncertainty (Heisenberg)	162
(ii) Complementarity (Bohr)	164
(iii) Yin and Yang (Mysticism and Physics)	165
(iv) Logic of Being (Jain Logic)	167
(v) Wave Functions (Equations for Everything)	168
(vi) Ultimate Strangeness (Quantum Entanglement)	170
(vii) Copenhagen (Michael Frayn)	174
6. What?	175

Chapter III. Who Are We?

Modern psychology postulates that human consciousness is a creative and interactive system that constructs a model of a lawful world, attributes minds to others, and creates a self upon which to base a personal narrative. Truth is determined by the brain's belief systems, which involve complex neuronal networks and many different 181

neurotransmitters. Social forces often make belief more a matter of solidarity than of reason. Just as perception makes a model that explains the world we experience, so religious belief creates a purpose for our existence, often attributing this to a divinity. The human brain has many different states of awareness. Meditation combines aspects of both sleep and wakefulness. Inward thinking often deals with matters beyond the reach of perception. Our intuitions of the transcendent (or the manifestations of the divine) vary from one culture to the next. Science adapts its theories as new information becomes available, whereas religion defines its truth in doctrines, denouncing other beliefs as heresy. Yet many religious parables remain elusive to definitive interpretation.

1. Consciousness

(i) Streams of Thought (William James)	181
(ii) Cognitive Psychology (Language, Memory and Attention)	183
(iii) Creative Interactions (Modeling the World)	187
(iv) Theory of Mind (Knowledge of Others)	189
(v) Evolutionary Side-Effects (Agency and Self)	193
(vi) Function of Knowing (Justified True Belief)	194
2. Belief	
(i) Words of Trust (Belief and Knowledge)	196
(ii) Need to Believe (Overcoming Uncertainty)	197
(iii) Sociology of Belief (Committee Decisions)	200
(iv) Spirituality and Religion (Aspects of Belief)	202
(v) Believing Brain (Dopamine, Blood Flow)	205
(vi) Placebo Domino (Medicine and Alternatives)	210
(vii) Dissonance (Festinger)	215
(viii) Unconscious Processing (Aliefs)	217
(ix) Unfounded Beliefs (Art, Psychosis, Epilepsy)	220
3. Inward Thinking	
(i) States of Mind (Sleep, Meditation, Universal Awareness)	226
(ii) Thinking of God (Cosmology, Teleology, Ontology)	234
(iii) Sense of the Numinous (Idea of the Holy)	238
(iv) Divine Manifestations (Shiva Nataraja)	240
(v) World without God (Atheism)	244
(vi) Religion without God (Buddhism)	249
(vii) Choice of Guru (Zen Koans)	250
(viii) Epimenides' Legacy (Gödel, Panentheism)	254

Contents	1X
4. Sacred Teachings	
(i) Understanding Revelation (Speaking in Parables)	257
(ii) Doctrine and Theory (Religious and Scientific Truths)	261
(iii) Son of Man (Nature of Christ)	264
(iv) Death of Arius (Creeds and Heresies)	268
(v) Confessing Church (Bonhoeffer)	269
5. Who?	271

275

Chapter IV. Why Should We Be Good?

Scientific determinism leaves no place for freedom of the will, even though such freedom is essential to human morality. However, just as physical determinism does not work in the subatomic world, so biological determinism may not work at the level of complexity represented by the human brain. Physiological experiments purporting to demonstrate that human consciousness only occurs after the brain has already made decisions about how to act are reviewed and criticized as being inappropriately dualistic. Human morality is centered on the ideas of compassion, justice and wisdom. Religion proposes these in the form of divine instruction, whereas science says such laws were learned so that human society could survive in a hostile world. Ideas of justice and morality lead to politics, where compassion is ever in conflict with power. Justice and morality require that we consider the consequences as well as the causes of our actions. Human principles of justice call into question the concept of a God who does not or cannot prevent needless suffering.

1. Freedom

2

(i) Determined Choices (Logic of Free Will)	275
(ii) Otherwise (Alternate Possibilities)	278
(iii) Children of Determinism (Social Need for Free Will)	279
(iv) Neurological Determinism (Libet's Experiments)	281
(v) Illusions of Choice (Harris)	286
(vi) Will in an Uncertain World (Quantum Physics)	289
(vii) Complexity (Chaos and Prediction)	292
(viii) Levels of Explanation (Emergence, Downward Causation)	294
. Destiny	
(i) Consolation of Eternity (Middle Knowledge)	296
(ii) Reconciled to the Will of God (Calvin, Jansen)	299
(iiii) Eastern Views (Atman and Dhamma)	302

3. Morality	
(i) Golden Rules (Moral Principles)	303
(ii) Reading the Writings (Scriptural Guidance)	309
(iii) Goodness and Godness (Euthyphro)	313
(iv) Wisdom and Compassion (Knowing and Doing)	317
(v) Savanna Hangovers (Evolutionary Psychology)	321
(vi) Milk of Human Kindness (Trust and Cooperation)	323
(vii) Altruism (Nature and Nurture)	325
4. Humanity	
(i) Learning to Be Good (Moral Development)	329
(ii) Cultura Animi (Humanism)	331
(iii) Natural and Unnatural Acts (Natural Law)	334
(iv) Criminous Clerks (Religious and Secular Justice)	338
(v) Mediators of Compassion (Bhodisattvas)	340
(vi) Oracles and Prophecies (I-Ching, Guan Yin)	341
(vi) Freedom of Conscience (Moral Risk)	343
5. Justice	
(i) Moral Economics (Public Goods)	345
(ii) My Brother's Keeper (Falling)	348
(iii) States of Man (Art of Politics)	349
(iv) Writing on the Ground (Woman Taken in Adultery)	353
(v) Power and Panopticon (Bentham and Foucault)	356
(vi) Authority (Milgram)	359
(vii) Five Arguments and Three Songs (Theodicy)	361
6. Why?	364

Chapter V. Where Are We Going?

369

Death comes to us all. Science proposes that death is the end of the individual consciousness. Grey areas exist on the borderline of death, particularly when breathing is artificially maintained. Nevertheless, when the heart finally stops beating, the body becomes a corpse and enters into decay. The belief that we may somehow survive death runs deep in human thought. The immortality of the soul leads to ideas of resurrection in the West and of reincarnation in the East. In both, death comes with judgment. Our lives determine whether we are bound for heaven or condemned to hell, whether we escape from continual rebirth or return. Science says these ideas are fanciful. Yet science knows not what will happen when the stars go out and reality is no more. Perhaps

X

we may escape from mortality by understanding ourselves, contributing to human knowledge, and thereby becoming part of a more general consciousness.

1. End of Life	
(i) Moon and Earth (Polynesian Mythology)	369
(ii) After Life Is Death (Process of Dying)	370
(iii) Living and Breathing Souls (Determining Death)	372
(iv) Near Death (Experiencing the Afterlife)	375
(v) Life before Birth (Reincarnation)	380
2. Shadow of Death	
(i) Facing Death (Hodler's Paintings)	384
(ii) Funeral Rites and Afterlives (Cultural Differences)	386
(iii) Mourning (Greek Epigraphs and Stelae)	388
(iv) Dances of Death (Painting and Music)	391
(v) Judgment (Egypt, Enma, Dives)	393
(vi) Physics of Hell (Galileo, Dante, Swinden)	398
3. Promises of Heaven	
(i) Immortal Souls (Er, Daniel, Isaiah)	399
(ii) Wishful Thinking (Feuerbach, Uncle Vanya)	402
(iii) Sleep and Death (Dream of Gerontius)	406
(iv) Hadrian's Poem (Disembodied Souls)	407
(v) Resurrection of the Body (Embodied Afterlife)	409
(vi) Problems in Heaven (Logic of Eternity)	412
4. End of Time	
(i) Life and Death of Stars (Fate of the Earth)	413
(ii) The Second Law (Physical Eschatology)	416
(iii) I Am Who I Will Be (End Times and Omega Points)	421
(iv) Return of the King (Dreams of a Messiah)	426
(v) Multiple Manifestations (Bhagavad Gita)	427
(vi) Kingdom of Heaven (Present and Future)	430
5. Escape from Mortality	
(i) Death and Dharma (Tales from the Mahabharata)	433
(ii) Nachiketa Visits Death (Katha Upanishad)	436
(iii) Enlightenment (Anatta and Agape)	437
(iv) Ars Longa (Vita Brevis)	439
(v) Art of Dying (Epicurus, Hume)	445
(vi) In My End Is My Beginning (Time's Arrow)	448
(vii) Conference of the Birds (Attar)	449
6. Whither?	453

Contents	

Epilogue	459
1. Tentative Conclusions	
(i) Truth is an amalgam of the real world and the mind of man	459
(ii) Many are the ways to religious insight	461
(iii) Two opposing goals can organize our lives	462
(iv) The numinous is independent of organized religion	464
(v) Art is the way we can face what we do not know	467
(vi) Life has a purpose	468
(vii) We exist in a plurality of belief	470
2. Answers to the Questions?	471
Subject Index	473
Person Index	493