



Frontispiece: Deogarh, Daśavatāra Temple, relief on the south wall showing Viṣṇu Anantaśāyin

AN INTEGRATED VIEW OF THE COSMOS

This Vedic imagery throws a clear light on the similar symbolic images of the Puranas, especially on the famous symbol of Vishnu sleeping after the *pralaya* on the folds of the snake Ananta upon the ocean of sweet milk. . . . For they [the poets] have given a name to Vishnu's snake, the name Ananta, and Ananta means the Infinite; therefore they have told us plainly enough that the image is an allegory and that Vishnu, the all-pervading Deity, sleeps in the periods of non-creation on the coils of the Infinite. As for the ocean, the Vedic imagery shows us that it must be the ocean of eternal existence and this ocean of eternal existence is an ocean of absolute sweetness, in other words, of pure Bliss.

Sri Aurobindo, *The Secret of the Veda*¹

The general plan of this book is suggested by the illustration chosen for its frontispiece. Brahmā, the four-faced god of creation, is sitting on a lotus blossom above the sleeping figure of Vishnu, the all-pervading Deity. We will take the figure of Brahmā to represent the universe in the four aspects referred to in the title as “faces.” Universes can be imagined as bubbles emerging from an infinite sea, symbolized in Hindu mythology as an ocean of milk. The bubble we live in is large and richly varied. As indicated by the above quotation from *The Secret of the Veda*, the ocean of sweet milk out of which worlds arise symbolizes pure bliss, the delight that underlies creation.² This suggests that the universe is a delightful place to be, though it does not always appear that way. The highest aim of cosmology should be to aid us in recovering the secret delight that is concealed within the universe.³ But a superficial approach that excludes any of the faces must be avoided; hence we will examine the universe in terms of each one. Afterward, they can all be integrated into a single cosmic picture.

Cosmology is an ongoing search for knowledge of the universe as a whole that has a long history going back to the earliest known civilizations. It is more than simply a science, for it involves the search for a total worldview that will make the universe and our place in it intelligible to us. Today cosmology is

widely considered to be a branch of modern physics. But physics is concerned with only one face—the physical. This is the most well-defined face of the universe. Modern science is capable of supplying us with a wealth of useful information about it, but our knowledge of the nature of the physical world is incomplete. We have been conditioned by the scientific culture we share to think of the universe exclusively as a world of stars and galaxies. Yet there are competing theories based on the current laws of physics and none of them can completely satisfy us. They are, after all, only mental attempts to coordinate what we observe through our physical senses.

There are other faces beyond the physical, which are dealt with by different types of cosmology. These include a psychic face, a magical face, and an evolving face. They are not directly perceptible to us.⁴ We can observe part of the *physical face*, though much of it still lies beyond our means of detection. Scientific theories attempt to bridge the gap. The *psychic face* appears to us in the form of dreams and visionary experiences.⁵ Mythical stories and symbols are employed to express what is revealed in this way. Pictorial images are needed to represent the *magical face*, which is fluid and difficult to fix in strictly logical terms. Finally, metaphysical principles are required for a comprehension of the *evolving face*, the most elusive and far-reaching of them all. Thus a different type of cosmology is necessary for each face.

We survey four types of cosmology and link them to the faces just mentioned. These are *mythical cosmology* (Psychic Face), *scientific cosmology* (Physical Face), *traditional cosmology* (Magical Face), and *evolutionary cosmology* (Evolving Face). Each type describes an aspect of the universe, which as a whole displays various facets of a single complex being. The faces appear to be independent; in reality, however, they are closely interwoven in a grand harmony. Although we are aware of only one universe, it manifests itself in different ways.⁶ A single type of cosmology cannot exhaust its manifold nature. Even when all four types are combined, they only offer a glimpse of an

indivisible reality that lies hidden from view. For that reality is an intrinsic whole, not a constructed unity that the mind pieces together from sundered parts.

This enlarged approach to cosmology has many advantages, the most important being that it avoids the reductionism implicit in an exclusively physical picture of the universe. Much of modern science is strongly reductionist in character; this has been a great hindrance to those seeking a more holistic conception of the world. But little can be gained by mingling together the different faces of the universe in an indiscriminate fashion. Many people who are opposed to reductionism have chosen this alternative, including physicists who try to see parallels between modern physics and Eastern mysticism. Nevertheless, the worldviews involved in such efforts are literally “worlds” apart.⁷ The potential dangers in merging conflicting views were recognized in the seventeenth century by the German philosopher Leibniz. He distinguished carefully between organic and mechanistic modes of thought, yet accepted both of them as complementary ways of viewing the world.

Our approach is similar, in this respect, to that of Leibniz.⁸ We will not confuse the various types of cosmology, for there are fundamental differences between them. Each type is considered in its own terms as fairly as possible. This by no means implies that they should be treated as independent of one another. Some of them are more inclusive and reveal deeper layers of reality than others. As will become evident toward the end of this book, I consider the view of an evolving universe presented by Sri Aurobindo to be the deepest and most comprehensive of all. His vision encompasses all of the cosmic faces in its vast scope, illuminating the inner spring of delight and showing us the most effective path leading to it.

We will draw upon the resources of philosophy, science, mythology, religion, and poetry to assist us in finding an appropriate way of relating to the universe. All of them have traditional connections with our deepest cosmological concerns. They may not give us the working knowledge of material systems

that modern science affords, but they suggest answers to ultimate questions on which it must remain mute. This kind of science, with its associated technology, caters primarily to our material interests and reduces knowledge to an accumulation of facts and theories.⁹ The knowledge we are seeking is an understanding of the universe that will enable us to recapture the delight that underlies its existence. Delight like this cannot be bought and sold in commercial marketplaces. Sometimes, it arises spontaneously within us when we least expect it. Poets have often noted this; for example, it awakened in the English poet Wordsworth a sense of divinity in Nature:

And I have felt
 A presence that disturbs me with the joy
 Of elevated thoughts; a sense sublime
 Of something far more deeply interfused,
 Whose dwelling is the light of setting suns,
 And the round ocean and the living air,
 And the blue sky, and in the mind of man;
 A motion and a spirit, that impels
 All thinking things, all objects of all thought,
 And rolls through all things.¹⁰

Later in life, it enabled him to hear “the still, sad music of humanity, nor harsh nor grating,” that chastened and subdued his restless spirit.¹¹

The order of exposition followed is not primarily historical. After an introductory chapter covering some general ideas presupposed throughout the book, we turn to a consideration of mythical cosmology. This provides an overview of the issues concerning cosmic manifestation. A discussion of scientific cosmology comes next, in which models of the physical universe are examined. The magical three worlds model of traditional cosmology is then contrasted with them. A chapter on evolutionary cosmology completes our survey of the four faces of the universe. Finally, we consider the role of cosmic poetry in cosmology and sum up the conclusions derived from our study.

Chapter I, “Consciousness and the Universe,” is concerned with how we become aware of the universe, different theories

about its origin, and the importance of cosmic consciousness. The view in this chapter is that the universe is a manifestation of Consciousness. Different modes of consciousness are distinguished within the totality of being. Related themes of harmony and variety are also noted, for they play significant roles throughout the book. We also compare different motivations for studying cosmology and conclude that the primary motive is to experience the universe from the standpoint of cosmic consciousness. This is the unifying thread running through the various types of cosmology presented here. It can offer us a taste of the delight that generated the universe with its manifold beauties. The chapter ends with a consideration of the relation of general worldviews to cosmology, and a thumbnail sketch of the history of Western cosmology from the ancient Greeks to our own time.

The next two chapters deal with the Psychic Face. Chapter II, "Mythical Cosmology," describes the world picture found in early cultures. We compare creation myths with scientific cosmology, and various theories of myth are examined. Brief summaries of Sri Aurobindo's interpretation of the Veda and a discussion of the role of the Great Mother Goddess in creation myth are followed by a few examples to illustrate mythical approaches to the question of cosmic origins. The crucial notion of a boundary between different states of being is introduced here. This concept appears frequently in later chapters. Chapter III, "The Stanzas of Dzyan," is concerned with a widely overlooked creation myth that forms the core of H.P. Blavatsky's neglected masterpiece, *The Secret Doctrine*. Consideration is given to the inner source of creation myths and the importance of transitional states. In addition, the Stanzas of Dzyan are treated in enough detail to bring out the pervasive features of creation myths. For this purpose, a commentary is provided for selected verses from the opening Stanzas on cosmogenesis. The chapter closes with a short analysis of Beethoven's Ninth Symphony viewed from a cosmological perspective.

After myth, we take up the Physical Face. Chapter IV, “Modern Scientific Cosmology,” begins with an examination of the expression “laws of nature,” summarizes the discovery of the realm of the galaxies by the American astronomer, Edwin Hubble, and discusses Einstein’s general theory of relativity. It proceeds with the topic of cosmological models, showing how various kinds of models have been derived from general relativity. Some implications of the singularity that appears at the origin of the universe are also touched upon. In Chapter V, “The Big Bang and Beyond,” an overview is given of the foundations of quantum mechanics. This leads into the theory that the universe began as a quantum vacuum fluctuation. The chapter continues with a consideration of a few puzzles associated with the Standard Big Bang Model. We introduce concepts of fine-tuning, the anthropic principle, and multiple universes, after which a short description of inflationary universe models is given. Scientific and religious explanations of fine-tuning are compared, and a resolution of their differences is proposed. Finally, we explore some speculative implications of the recent and still controversial discovery of a runaway universe.

Our attention then shifts to the Magical Face. Chapter VI, “Traditional Cosmology,” focuses on the relationship of the macrocosm and the microcosm together with some additional doctrines that are related to it. In this type of cosmology, man as the microcosm is the central image for understanding the universe. This is the essential key to the picture of the magical universe being examined in this chapter. Beginning with roots in Plato’s influential cosmological dialogue, the *Timaeus*, it reached its climax in Renaissance Hermeticism. A section follows in which a comparison is made between the traditional three worlds model of the universe and modern scientific models. The chapter ends with the summary of a traditional cosmology developed in ancient China. It provides a contemplative interlude before entering into a discussion of evolutionary cosmology.

The last face of the universe to be examined is the Evolving Face. Chapter VII, “Evolutionary Cosmology,” is an introduction

to this topic. We present a survey of evolutionary biology along with its connections to Darwinism. Several speculative Western philosophies of evolution are then reviewed. The major emphasis, however, is on Sri Aurobindo's conception of spiritual evolution as expounded in *The Life Divine*. He sees the universe as an evolutionary manifestation of a transcendent reality with soul as the central element in the process. His views are considered on the relation between creation and evolution, the principles of Being, and the way in which spiritual evolution proceeds. This chapter ends with the implications of his vision for the future of the soul in the universe.

In Chapter VIII, "Cosmic Poetry," each type of cosmology is illustrated by a great poem that places the question of human destiny in a broad cosmological context. Poetry is an integral part of our study of cosmology. It is a powerful force for refining and deepening our understanding of the world rather than, as sometimes thought, a mere diversion from more "serious" pursuits. Moreover, our viewpoint is that the universe appears to be more like a great poem than a logic machine or computer. This will be our final clue to the vast consciousness behind it. We must feel our way into the universe and not simply describe it in mathematical terms (though this is also important in cosmology). Several examples illustrate the capacity of cosmic poetry to illumine our relationship with the universe, and each one represents a different type of cosmology. These poems derive with varying degrees of insight from an experience of cosmic consciousness. Each is capable of opening a door to the fuller delight we are seeking.

Some readers might be tempted to omit the chapters that least interest them. That is of course possible, but the book develops progressively and is designed to be read as a continuous whole. All the types of cosmology deserve our attention; each has an intrinsic interest of its own, bringing out certain features of the universe neglected by the others. In this connection, a word of caution is necessary at the outset: we will cross the traditional demarcations among academic disciplines, and many

professional scholars might frown upon our temerity. But cosmology is so broad in scope that the only way to see the whole forest without having our vision blocked by the trees is to omit nonessential details wherever possible. Technical difficulties are recognized only where it is necessary to do so. The endnotes often amplify points made in the text, so should not be ignored.

The present book is not exhaustive. Rather, it should encourage readers to regard the universe in a new way. For cosmology does not belong entirely to professionals, be they scientists, philosophers, or theologians. In a complex technological society like our own, we are inclined to believe that experts can solve every problem for us. Even cosmology is delegated to specialists, who are usually reluctant to stray outside the bounds of their chosen disciplines. The universe, however, lies beyond limited academic boundaries. It is the totality that includes us all and upon which our existence as biological organisms depends.

Each person has to establish a basis of spiritual solidarity with it or be resigned to leading a fragmented life in the world. This fragmentation applies to social and religious institutions as well as to individuals; they generally fall short of true universality by underestimating the importance of forging a strong inner bond with the cosmos. Only a concentrated individual effort can accomplish such a task. Nevertheless, a book like this could not be written without relying on the knowledge gained by countless scholars and scientists working in different fields. Yet experts cannot be expected to do it all for us. They can tell us a great deal about the details, but we need not accept their interpretations of the universe *as a whole*. For this, we rely on our own judgment and power of integration.