

# WHEN TWO WORLDVIEWS MEET

## A Dialogue Between the *Bhāgavata Purāṇa* and Contemporary Biological Theory

JONATHAN B. EDELMANN  
Harris Manchester College  
Michaelmas Term, 2008

Thesis submitted in accordance with the requirements for the degree of Doctor of Philosophy,  
Faculty of Theology, University of Oxford

### *Supervisors*

PROFESSOR JOHN H. BROOKE, Oxford University, Theology Faculty  
PROFESSOR FRANCIS X. CLOONEY, S.J., Harvard University, Faculty of Divinity

### *Examiners*

PROFESSOR ALISTER MCGRATH, Oxford University, Theology Faculty  
PROFESSOR GRAHAM SCHWEIG, Christopher Newport University, Religious Studies

*for my parents,  
who made this possible*

## TABLE OF CONTENTS

ABSTRACT.....	5
EXTENDED ABSTRACT.....	6
STYLE GUIDE.....	9
INTRODUCTION.....	12
§ 0.1 – METHODOLOGY AND RATIONALE .....	19
§ 0.2 – A DIALOGUE BETWEEN SCIENCE AND RELIGION? .....	32
§ 0.3 – TYPES OF BIOLOGICAL TEXTS.....	45
§ 0.4 – ANATOMY OF A WORLDVIEW .....	49
CHAPTER 1 – SETTING THE SCENE .....	55
§ 1.1 – BHĀGAVATA PURĀNA OVERVIEW.....	55
§ 1.1.1 – Date and Synopsis of the Books .....	56
§ 1.1.2 – Relation to Other Texts.....	68
§ 1.1.3 – Social Theory, Theology and Practice .....	74
§ 1.2 – CONTEMPORARY EVOLUTIONARY THEORY OVERVIEW.....	84
§ 1.2.1 – Charles Darwin’s Evolution.....	95
§ 1.2.2 – Modern Evolutionary Synthesis .....	104
CHAPTER 2 – THE ONTOLOGY OF BODY, MIND AND CONSCIOUSNESS .....	112
§ 2.1 – ONTOLOGY OF THE BHĀGAVATA .....	113
§ 2.2 – PHYSICALISM: VIEWS FROM DARWIN AND NEUROSCIENCE .....	128
§ 2.2.1 – Some Christian Views on the Soul.....	137
§ 2.2.2 – Neuroscience and Physicalism .....	146
§ 2.3 – RECONCILING PHYSICALISM AND THE ONTOLOGY OF THE BHĀGAVATA.....	151
§ 2.4 – THE POSSIBILITY OF DIALOGUE.....	160
§ 2.5 – CHAPTER SUMMARY .....	165
CHAPTER 3 – NATURE, KNOWLEDGE AND YOGA IN THE BHĀGAVATA.....	168
§ 3.1 –KNOWLEDGE AND THE MEANS OF ACHIEVING IT.....	169
§ 3.2 – TESTIMONY, NONSENSORY PERCEPTION AND PRACTICE.....	182
§ 3.2.1 – Māyā.....	189
§ 3.3 – THE STUDY OF NATURE AS VAIṢṆAVA-YOGA .....	202
§ 3.3.1 – Cosmic Body .....	204
§ 3.3.2 – Theistic Sāṃkhya .....	218
§ 3.3.3 – Cosmography.....	226
§ 3.4 – CHAPTER SUMMARY .....	233
CHAPTER 4 – SEEING AND HEARING TRUTH: PARALLELS IN OBJECTIVITY AND TESTIMONY.....	235
§ 4.1 – OBJECTIVITY IN THE NATURAL SCIENCES .....	235
§ 4.2 – CLOSER COMPARISONS .....	253
§ 4.3 – TESTIMONY IN THE SCIENCES .....	259
§ 4.4 – CLOSER COMPARISONS .....	272
§ 4.5 – CHAPTER SUMMARY .....	283

CHAPTER 5 – MOVING FROM NATURE TO GOD: PARALLELS IN THEORY AND PRACTICE .....	286
§ 5.1 – FROM SCIENTIFIC THEORY TO GOD .....	287
§ 5.2 – CLOSER COMPARISONS .....	295
§ 5.3 – SCIENCE AS A FORM OF RELIGIOUS PRACTICE.....	305
§ 5.4 – CLOSER COMPARISONS .....	325
§ 5.5 – CHAPTER SUMMARY .....	330
CONCLUSION.....	333
APPENDIX A.....	352
REFERENCES.....	353

### LIST OF FIGURES

FIGURE 0.1: TYPES OF BIOLOGICAL TEXTS .....	46
FIGURE 3.1: TESTIMONY, PRACTICE AND KNOWLEDGE.....	184
FIGURE 3.2: THE EIGHTFOLD ASPECTS OF YOGA .....	207
FIGURE 4.1: THE PANOPTICON.....	251
FIGURE 5.1: THE OVERLAPPING AIMS OF THE BHĀGAVATA AND THE SCIENCES .....	288

## ABSTRACT

*When Two Worldviews Meet:  
A Dialogue Between the Bhāgavata Purāṇa and Contemporary Biological Theory*

Jonathan B. Edlmann  
Harris Manchester College, Oxford University

Michaelmas Term, 2008

Over the past thirty years, academic dialogues on the relationships between the sciences and religions have flourished, albeit primarily within Judeo-Christian historical, theological and philosophical contexts. Can a Hindu tradition be brought into this dialogue? The *Bhāgavata Purāṇa* is one of the most well-known sacred texts of India, and biology, Darwinism in particular, has become one of the most spirited areas of the science and religion dialogue in academia, as well as in the popular media. This thesis examines the possibility, scope and foundational topics involved in a dialogue between Vaiṣṇava-Hindu theology as found in the *Bhāgavata*, and the theoretical, philosophical and theological issues surrounding contemporary biology.

To examine the possibility and scope of a *Bhāgavata*-science dialogue, I focus on the theological, ontological, epistemological and teleological presuppositions that each tradition bring to the study of nature, outlining the similarities and differences in their approaches. I establish the grounds for further discussion through a comparative analysis of terms such as “consciousness,” “knowledge” and “goal of knowledge” as they appear in the *Bhāgavata* and noteworthy Darwinian texts.

My argument is that although *prima facie* the two traditions appear different in their philosophical, scientific and theological approaches, there are a number of areas of common interest and parallels, especially in their epistemologies and teleologies. In the case of genuine differences, such as their views on the ontology of consciousness, I demonstrate the possibility of reconciliation. Clarifying the conceptual differences, establishing parallels and demonstrating areas of common interests opens the possibility and widens the scope for further dialogue.

## EXTENDED ABSTRACT

*When Two Worldviews Meet:  
A Dialogue Between the Bhāgavata Purāṇa and Contemporary Biological Theory*

Jonathan B. Edlmann  
Harris Manchester College, Oxford University

Michaelmas Term, 2008

Over the past thirty years, academic dialogues on the relationships between the sciences and religions have flourished, albeit primarily within Judeo-Christian historical, theological and philosophical contexts. With the development of science-religion discussion scholars have noted the need to establish intellectual norms and to increase the diversity of topics. Philip Clayton (2006: 2) argues, “a diversity of approaches is crucial if ‘science and religion’ is to flourish and to progress as a distinct field of study.” For the diversity to increase, argues Clayton, scholars must examine the ways in which science and religion appear differently when viewed from the perspectives of various religious traditions; scholars need to widen the field by looking at non-Judeo-Christian traditions. There is a need, then, for an investigation of the ways a Hindu tradition might relate with the Western sciences. However, *can* a Hindu tradition be brought into this dialogue? With so little academic literature the relationship of Hinduism and a Western science there is no self-evident answer to this question. There is a need, therefore, for a critical investigation into the possibility and scope of dialogue between a Hindu theology and a science—that is the aim of this thesis. Towards this end I have provided a comparative analysis of terms such as “consciousness,” “knowledge” and “goal of knowledge” as they appear in the *Bhāgavata* and noteworthy Darwinian texts.

The argument of this thesis is that although *prima facie* the two traditions appear different from one another in terms of their scientific and philosophical views and although there are indeed differences, commonalities exist between the *Bhāgavata Purāṇa*’s theology and practice and the theologies, philosophies, theories and practices that are associated with contemporary biological science. These commonalities, or the meeting points of the two worldviews, are examined specifically in the ontology of consciousness, epistemology and the teleology of knowledge, the combination of which constitute the philosophical presuppositions of the worldviews under examination. This thesis demonstrates, through a conceptual comparison of consciousness and knowledge in the relevant texts, that practitioners in each tradition have similar interests and have approached problems in similar ways, even though the traditions of which they are part originated in different areas of the globe and worked independently of one another for centuries. The purpose of this

examination is to explore the possibility and scope of dialogue between persons informed by the *Bhāgavata Purāṇa* and persons informed by the biological sciences. I argue that the existence of the commonalities demonstrated in this thesis support the possibility and widens the scope for further dialogue between Vaiṣṇava and scientific practitioners. In other words, there is enough common ground for them to say something meaningful and helpful to one another. Their interests, topics of investigation and approaches are certainly not identical, but they have sufficient common concerns and goals so as to learn from one another and entuse more conversation.

The INTRODUCTION addresses the methodological and linguistic issues involved in comparing and contrasting two historically isolated traditions. Although I call this thesis a dialogue between science and religion, those terms must not go without critical examination. They are loaded with many types of meanings and associations from Western intellectual history; they may, therefore, hinder open communication rather than bolster it. I argue that an interaction of worldviews is the best way to characterize this dialogue because it allows for more subtly and openness than would the terms science and religion. “Worldview” will mean the ontological, epistemological, teleological, social and theoretical dimensions that compose a belief system and practice. I do not suggest that the terms “science” and “religion” are entirely ineffective in marking-out genuine differences between the *Bhāgavata* and biology, but that they artificially constrain rather than create clarity of understanding between Vaiṣṇava and scientific practitioners.

CHAPTER 1 sets the scene for dialogue, examining the recent history of Western biology, theology and philosophy, as well as central themes in the *Bhāgavata Purāṇa*. I have brought in Christian theological and Western philosophical commentators on biology when they illuminate the context of the sciences and when they help elucidate the issues involved in the contemporary science-religion dialogue.

In CHAPTER 2 I begin to address what I consider the most significant ontological difference between the two traditions—their views of consciousness. I describe notions of consciousness and mind in Darwinism, Christian theology and the *Bhāgavata*. The first two have been grouped together because, as I show, they share ontological assumptions, which are quite unlike those of the *Bhāgavata*. Despite the different ontologies, however, it is clear that a study of the true nature of consciousness and mind is important for both Darwinists and practitioners of the *Bhāgavata*. The primary difference is that many leading Darwinists do not believe consciousness can exist independent of the brain, whereas the *Bhāgavata* does. Although the differences between Darwinian, Christian theological and *Bhāgavata* views of consciousness seem stark at first, they become less so when careful attention is paid to the manner in which the words “mind” and “consciousness” are used; a clear understanding of the way these words are used indeed establishes the conceptual foundations for further discussion. And yet, in making an ontological distinction between nature and consciousness, it appears that the *Bhāgavata* would not be concerned with dialogue with the sciences, because such a definition of consciousness leaves it entirely outside the field of the natural sciences. The remainder of this thesis addresses this possible deterrent to dialogue.

CHAPTER 3 shows how and why knowledge of nature is important to the *Bhāgavata*, which establishes the basis for comparison with Western theories of knowledge in CHAPTERS 4 and 5. It is shown how the *Bhāgavata*'s non-physical view of consciousness, as discussed in CHAPTER 2, shapes its theory of knowledge in the context of its devotional yoga, and how yoga is the means of attaining a direct experiential awareness of the self and God, or Krishna. A detailed description is provided of the important role that the study of nature has in devotional yoga, as described in key sections of Books Two, Three and Five of the *Bhāgavata*. Although knowledge is defined in the *Bhāgavata* as non-sensory perception of the self and God, the study of nature plays an important role in generating that knowledge and in highlighting illusion (*māyā*). This chapter describes the relationships between statements about nature and about God in the *Bhāgavata*'s devotional theology.

Having examined aspects of the *Bhāgavata*'s view of consciousness and theory of knowledge, CHAPTER 4 explores similarities with aspects of scientific epistemologies. I argue that scientific understandings of "objectivity" are similar to the yogic values of detachment and dispassion embodied by the devotional practices of the *Bhāgavata*. It is also shown that both traditions employ "testimony," or the words of reliable and trustworthy individuals, as a means of constructing and developing their views. While CHAPTER 3 highlighted different points of views on the study of nature and of the sciences, the epistemological parallels shown in CHAPTER 4 further reduce the apparent dissimilarities between the *Bhāgavata* and biology. Despite the similarities of objectivity and testimony, one might also argue that dialogue is not possible because the natural sciences and the *Bhāgavata* focus on different areas of knowledge. It is often said that the natural sciences are concerned with this-worldly knowledge and the *Bhāgavata* with other-worldly knowledge. The next chapter shows this to be a false dichotomy.

CHAPTER 5 discusses common ground between the intellectual and spiritual goals of the *Bhāgavata* and those of Western scientists and theologians who view the study of nature as leading to moral and religious development. For the *Bhāgavata*, the devotional study of nature plays an important role in developing knowledge of non-physical objects, and this sensibility is reflected in the writings of a number of important Western scientists, philosophers and theologians, thus showing another common concern between the *Bhāgavata* and the Western traditions of science. This chapter also takes up two specific issues in contemporary biological theory: the struggle for existence and the problem of biological design. It is suggested that these can be reconsidered in the context of the *Bhāgavata*'s devotional theology and practice as described in earlier chapters.

There are, then, three areas in which further dialogue is possible: consciousness, epistemology and the teleology of knowledge. Moreover, in this thesis I have established the conceptual foundations by which practitioners in each tradition can better understand one another.

© Jonathan B. Edlmann, 2008. All rights reserved. No part of this thesis may be used or reproduced in any manner whatsoever without the prior written permission from the author except in the case of brief quotation embedded in critical articles and reviews, and with proper citations.

---

## STYLE GUIDE

### Referencing

I have used the Harvard Referencing System. I have not followed the convention of putting all Sanskrit words in italics because there are so many Sanskrit words used here, but I have put Sanskrit sentences in italics. I have used American English spelling, e.g., realize as opposed to the British realise.

### Sanskrit

Unless otherwise stated, all translations are my own. I have used the Ganesh Tagare (1976), C L Goswami (1971), and Bhaktivedanta Swami (1975) translations of the *Bhāgavata*, and Śrīdhara Svāmin's (1983) Sanskrit commentary called the *Bhāvārtha-dīpikā* as my primary guides in translation. I have followed the numbering of *Bhāgavata* verses from Bhaktivedanta (1975). Unless otherwise stated, all numbers in parenthesis refer to verses from the *Bhāgavata*. Thus, a quotation from the first book, second chapter, verse fifteen will simply appear as the reference (1.2.15).

When a verse or a portion of a verse of special importance is provided, I have placed the Sanskrit in a footnote so that Sanskrit readers can see how the translation was made. I have also placed Sanskrit words in parentheses after my English translations when relevant.

### Abbreviations

<i>Bhagavad-gītā</i>	<i>Gītā</i>
<i>Bhāgavata Purāṇa</i>	<i>Bhāgavata</i>
<i>Bhāvārtha-dīpikā</i>	Śrīdhara + verse from <i>Bhāgavata</i>
<i>Bṛhadāraṇyaka Upaniṣad</i>	<i>BrhU</i>
<i>Descent of Man</i>	<i>Descent</i>
<i>Nyāya-Sūtra</i>	<i>NS</i>
<i>Origin of Species</i>	<i>Origin</i>
<i>Ṛg-Veda</i>	<i>Ṛg</i>
<i>Tattva-Sandarbha</i>	<i>TS</i>
<i>Yatīndra-mata-dīpikā</i>	<i>YMD</i>
<i>Yoga-Sūtra</i>	<i>YS</i>

## ACKNOWLEDGEMENTS

With a thesis project that partakes of not only one, but two traditions, each of which are enormous, it was essential for me to garner the sage advice and guidance of a wide range of scholars and scientists. Without their input, this project could never have happened.

My appreciation goes to my parents, who have lovingly supported education throughout my life. I took Dr. B. Alan Wallace's undergraduate course on Science and Religion at the University of California – Santa Barbara. His insight into both Buddhist and Western thought showed me that an East-West academic dialogue is possible and he continued to be an inspiration throughout my writing. Travis Chilcott gave me the idea of coming to Oxford, for which I am greatly thankful. When I arrived there, Dr. Ken Valpey helped to show me the way, with patience and understanding, in an otherwise bewildering environment. In addition, his comments on what became my Third and Fifth Chapters were very helpful. My friends at Harris Manchester College made what can be a lonely process fun, but I would especially like to thank Principal Rev. Ralph Waller for his constant encouragement and Joyce and Sue, the two kindest librarians in the world. Friends at the Oxford Centre for Hindu Studies such as Rasamandala Dasa, Kiyo, Rembert, Meru, Gopal and Jessica kept us laughing and they were brilliant colleagues; and thanks to Shaunaka Rishi, the Centre's director, for his efforts.

The support of my advisor Prof. John Brooke throughout my graduate work was invaluable. His perspective on Western science and religion is profound and hugely influenced my own. In addition, my warm thanks to my other advisor Prof. Francis Clooney S.J. for his illuminating comments and commitment to seeing me through the D.Phil. process. My thanks to Prof. Graham Schweig, whose warmth, encouragement and theological genius helped to further bring my project to life in its final stages. Lastly, my appreciation to Prof. Alister McGrath for his kind encouragement of my thesis project.

In the field of Sanskrit and Indian thought, my work could have never happened without the patient Sanskrit tutelage of Dr. Jim Benson and many other Sanskritists in Oxford University's Oriental Studies Faculty. At the Oxford Centre for Hindu Studies I spent many happy hours reading Sanskrit texts with Profs. Narasimhacary, Ashok Aklujakar, Maheshvara Nair, Shashiprabha Kumar and Gavin Flood. While doing field work in India, Dr. Satyanarayana dasa Babaji gave generously of his time. He answered my hundreds of questions and read *Bhāgavata* Sanskrit commentaries in Vrindavana, as did Gopiparanadhana dasa in the nearby Govardhana. Both greatly formed my thinking on this subject and I am grateful.

There were so many wonderful discussions that helped nurture this project, but I wish to specifically acknowledge Dr. Michael Cremo, Prof. Gerald Larson, Prof. Michael Denton, Prof. Peter Harrison, Dr. Kevin Sharp, Dr. Jan Olof Bengtsson, Prof. William Bernet, Dr. Hridayananda das Goswami, Prof. William Carroll, Prof. Pauline Rudd, Mr. Paul Sherbow, Prof. Steven Shapin, Prof. C. Mackenzie Brown and Dr. Sangeetha Menon.

Unfortunately, Dr. Richard Thompson and Prof. Arthur Peacocke passed away before seeing this work completed, but their input was greatly valued and they are missed.

A number of the ideas developed in this thesis were published in journals, and I benefited from the editor's comments and the reader's responses. Much of my methodological approach is developed in "Some Problems in the Hinduism and Science Dialogue" (2004), published in *The Global Spiral: A Publication of the Metanexus Institute*; thanks to C. Mackenzie Brown for his comments thereupon. My thanks to the comments of Steven Rosen, editor of the *Journal of Vaishnava Studies*, for his help on "Modernity's Warfare in Life and Religion: A Meeting with Charles Darwin and the *Bhāgavata Purāṇa*" (2005), which I used in Chapter Five. I am indebted to Michael Denton for his help in grasping the workings of Darwinism as seen by a geneticist and for working on our paper "The uniqueness of biological self-organization: challenging the Darwinian paradigm" (2007), which was published in *Biology & Philosophy*, a wonderful journal with fantastic editors. To Prof. William Bernet and the editors of *Journal of Consciousness of Studies* for our article "Setting Criteria for an Ideal Reincarnation Research" (2007), which factored largely into my second chapter.

A. C. Bhaktivedanta Swami Prabhupada's translation and commentary on the *Śrīmad-Bhāgavatam* brought the great gifts of India to me, and inspired me to plumb the depths of the Sanskrit language and India's philosophies and theologies as best I could. The beauty and sophistication of the *Śrīmad-Bhāgavatam* may never have been known to me if not for his accessible translation, Sanskrit to English transliteration and devotionally charged commentary.

Lastly, many thanks and salutations to my wife, Mariola, who tolerated my sleepless nights and my difficult work schedule, and who provided wonderful comments and insights on my entire thesis.

## INTRODUCTION

---

The long argument found in the *Bhāgavata Purāṇa* about the origin, development and operation of the natural world and their dependence upon God is an exemplar of ancient and medieval Indian theology and philosophy. It is a devotional crystallization of theological and philosophical reflection on the natural world, God and living beings based on Vedic, Upaniṣadic, Vedāntic, Tantric and Indian philosophical thought, such as Sāṃkhya and Yoga.

Many contemporary scientists and scholars consider Charles Darwin's theory of evolution by natural selection as the most important contribution ever made towards our theoretical understanding of the biological world, and his views have contributed significantly to developments in theology, philosophy, psychology, linguistics, anthropology and sociology. I describe the *Bhāgavata Purāṇa* and contemporary Darwinian evolutionary theory as worldviews because they have exerted massive influence over many areas of human thought and practice, albeit up until quite recently in different regions of the globe and in different intellectual arenas. Despite the great influence of these two traditions of thought, little academic work has been done on their relationship. One reason they have not been rigorously compared and contrasted is that they do not bear *prima facie* similarity to each other. In fact, they appear to hold such different views and have such different

intellectual concerns that one may be inclined to think they have nothing to say to each other, like two people who speak entirely different languages.

For hundreds of years, Western intellectual history has enjoyed a rich and sophisticated conversation between theology and science. We now have a wealth of historical, scientific, philosophical and theological literature that documents these dialogues, and yet these dialogues have taken place with little participation from Hindu (and Oriental) thought. With the advent of an even more robust science-religion dialogue during the past thirty years, many scholars and scientists now wish to examine non-Western thought in relation to the sciences.

Is dialogue possible between the theological traditions of the *Bhāgavata* and contemporary biological theory? And which areas lend themselves to comparative analysis and constructive dialogue? These broad questions can be approached in various ways, and yet scholars, even in the areas of science and religion, religious studies, philosophy, theology and history of science have devoted little attention to them. This thesis aims to clarify the primary parallels and conflicts between the two worldviews, focusing on their fundamental beliefs about reality, their ontologies, their means of knowing and their intellectual goals. I examine the possibility and scope of dialogue between persons versed in the *Bhāgavata*'s theological traditions and those informed by biological science, Christian theology and Western philosophy. This is achieved by highlighting specific areas for discussion within the fields of ontology, epistemology and teleology. Since a dialogue between Hinduism

and science in academia is at a formative stage, I aim to provide a landscape picture of the primary philosophical and theological issues inherent in each tradition, rather than a detailed examination of a particular issue.<sup>1</sup> In the context of this landscape, I have isolated specific themes for closer examination.

My approach resembles that of Alister E McGrath, who in *The Foundations of Dialogue in Science & Religion* (1998) forges relationships between science and Christian theology by exploring the methodology of each, including “such issues as the way in which knowledge is gained and confirmed, the manner in which evidence is accumulated and assimilated, and particularly the manner in which the world is represented” (29). McGrath provides a comparative analysis of each of these categories in much the same way as I compare and contrast foundational issues in the *Bhāgavata* and contemporary Darwinism. My approach also bears parallels to that of Sangeetha Menon, one of the few contemporary scholars of Hinduism to pay close attention to the sciences when considering Hindu philosophy and theology. Menon (2006) has mapped out some of the foundational concerns of Hindu thinkers (such as epistemology, consciousness and causality), and then suggests ways that these concerns might lead to fresh reflections on the sciences. Finally, in my approach to this dialogue I follow the lead of David Smith, who writes in *Hinduism and Modernity* (2003: x): “Like the reader inescapably within the confines of my

---

<sup>1</sup> Although I use the term Hinduism throughout this thesis, I do so with extreme caution since “Hindu” is not a word found in traditional Sanskrit texts, nor is it always successful in describing the traditions it is meant to describe. This thesis primarily examines Vaiṣṇava thought, which is one of the many aspects of Hinduism. When I do use the word Hinduism I mean the greater family of religions and philosophies of South Asia, of which Vaiṣṇavism is one part.

own time, I look at Hinduism through the eyes of modernity, but attempt also to look back at modernity through the eyes of Hinduism.” One tradition looking at the other, and then back at itself, is the essence of what I consider dialogue to be.

My thesis argues that although the ontologies, epistemologies and teleologies embedded within the *Bhāgavata* and contemporary biological theories do indeed differ, these differences are not as stark as they may at first seem, nor are they so wide as to prevent meaningful communication. In fact, the ontologies of consciousness and the epistemologies and teleologies of each tradition display parallels despite their *prima facie* differences, and these establish a foundation for dialogue. By showing that the *prima facie* differences between the *Bhāgavata* and contemporary biological science are not as great as they first seem, I am opening possibilities for further dialogue.

The remainder of this Introduction addresses the methodological and linguistic issues involved in comparing and contrasting two historically isolated traditions. Although I call this thesis a dialogue between science and religion, those terms must not go without critical examination. They are loaded with many types of meanings and associations from Western intellectual history; they may, therefore, hinder open communication rather than bolster it. I argue that an interaction of worldviews is the best way to characterize this dialogue because it allows for more subtlety and openness than would the terms science and religion. “Worldview” will mean the ontological, epistemological, teleological, social and theoretical dimensions

that compose a belief system and practice. I do not suggest that the terms “science” and “religion” are entirely ineffective in marking-out genuine differences between the *Bhāgavata* and biology, but that they artificially constrain rather than create clarity of understanding between Vaiṣṇava and scientific practitioners.

Chapter 1 sets the scene for dialogue, examining the recent history of Western biology, theology and philosophy, as well as central themes in the *Bhāgavata Purāṇa*. I have brought in Christian theological and Western philosophical commentators on biology when they illuminate the context of the sciences and when they help elucidate the issues involved in the contemporary science-religion dialogue.

In Chapter 2 I begin to address what I consider the most significant ontological difference between the two traditions—their views of consciousness. I describe notions of consciousness and mind in Darwinism, Christian theology and the *Bhāgavata*. The first two have been grouped together because, as I show, they share ontological assumptions, which are quite unlike those of the *Bhāgavata*. Despite the different ontologies, however, it is clear that a study of the true nature of consciousness and mind is important for both Darwinists and practitioners of the *Bhāgavata*. The primary difference is that many leading Darwinists do not believe consciousness can exist independent of the brain, whereas the *Bhāgavata* does. Although the differences between Darwinian, Christian theological and *Bhāgavata* views of consciousness seem stark at first, they become less so when careful attention

is paid to the manner in which the words “mind” and “consciousness” are used; a clear understanding of the way these words are used indeed establishes the conceptual foundations for further discussion. And yet, in making an ontological distinction between nature and consciousness, it appears that the *Bhāgavata* would not be concerned with dialogue with the sciences, because such a definition of consciousness leaves it entirely outside the field of the natural sciences. The remainder of this thesis addresses this possible deterrent to dialogue.

Chapter 3 shows how and why knowledge of nature is important to the *Bhāgavata*, which establishes the basis for comparison with Western theories of knowledge in Chapters 4 and 5. It is shown how the *Bhāgavata*’s non-physical view of consciousness, as discussed in Chapter 2, shapes its theory of knowledge in the context of its devotional yoga, and how yoga is the means of attaining a direct experiential awareness of the self and God, or Krishna. A detailed description is provided of the important role that the study of nature has in devotional yoga, as described in key sections of Books Two, Three and Five of the *Bhāgavata*. Although knowledge is defined in the *Bhāgavata* as non-sensory perception of the self and God, the study of nature plays an important role in generating that knowledge and in highlighting illusion (*māyā*). This chapter describes the relationships between statements about nature and about God in the *Bhāgavata*’s devotional theology.

Having examined aspects of the *Bhāgavata*’s view of consciousness and theory of knowledge, Chapter 4 explores similarities with aspects of scientific

epistemologies. I argue that scientific understandings of “objectivity” are similar to the yogic values of detachment and dispassion embodied by the devotional practices of the *Bhāgavata*. It is also shown that both traditions employ “testimony,” or the words of reliable and trustworthy individuals, as a means of constructing and developing their views. While Chapter 3 highlighted different points of views on the study of nature and of the sciences, the epistemological parallels shown in Chapter 4 further reduce the apparent dissimilarities between the *Bhāgavata* and biology. Despite the similarities of objectivity and testimony, one might also argue that dialogue is not possible because the natural sciences and the *Bhāgavata* focus on different areas of knowledge. It is often said that the natural sciences are concerned with this-worldly knowledge and the *Bhāgavata* with other-worldly knowledge. The next chapter shows this to be a false dichotomy.

Chapter 5 discusses common ground between the intellectual and spiritual goals of the *Bhāgavata* and those of Western scientists and theologians who view the study of nature as leading to moral and religious development. For the *Bhāgavata*, the devotional study of nature plays an important role in developing knowledge of non-physical objects, and this sensibility is reflected in the writings of a number of important Western scientists, philosophers and theologians, thus showing another common concern between the *Bhāgavata* and the Western traditions of science. This chapter also takes up two specific issues in contemporary biological theory: the struggle for existence and the problem of biological design. It is suggested that these

can be reconsidered in the context of the *Bhāgavata*'s devotional theology and practice as described in earlier chapters.

### § 0.1 – METHODOLOGY AND RATIONALE

Why open a dialogue between a theistic Hindu devotional tradition and the Western sciences? While this entire thesis addresses this question, I shall offer a few introductory remarks here. Scholars have noted that one of the greatest intellectual problems of our age lies in the discovery of relationships between the sciences and religions. The philosopher and mathematician Alfred North Whitehead (1925: 260) famously stated that:

When we consider what religion is for mankind, and what science is, it is no exaggeration to say that the future course of history depends upon the decision of this generation as to the relations between them. We have here the two strongest general forces (apart from the mere impulse of the various senses) which influence men, and they seem to be set one against the other—the force of our religious intuitions, and the force of our impulse to accurate observation and logical deduction.

The manner in which the two worldviews under examination here might communicate with one another matters immensely because of their profound influence on human life, and the examination of how one Hindu tradition relates to a science contributes to academic literature on science and religion, adding a fresh perspective.

Up to this point most of the literature on science and religion has been based on a discussion of a science and one of the Abrahamic religions, Christianity in particular. A dialogue between a Hindu tradition and a natural science requires a special approach and a sensitivity to the unique complexities involved, since the foundations of Hindu thought were developed long before the emergence of modern science in seventeenth-century Europe. Moreover, unlike their Judeo-Christian counterparts, few modern and contemporary Hindu thinkers have drawn upon the perspectives of Hindu textual traditions to write in detail about Western scientific theories. Nor have many Hindu thinkers incorporated modern and contemporary Western scientific theories into their theologies and philosophies as Judeo-Christian theologians have, and so even today Hindu thought about the natural world is isolated from modern and contemporary Western scientific thinking.

Equally, there is a need to carefully differentiate “religion” as interpreted within the existing science-religion dialogue from the thought and practice of Vaiṣṇavism, which bases itself on the *Bhāgavata*. Most of the scathing criticism of “religion” from materialist-scientists is directed at their own caricature of an Abrahamic religion, and in particular Christian fundamentalism, but such criticisms often tacitly spill over to include non-Western religions, even though the critics have virtually no knowledge of non-Western thought and their criticisms are not

always relevant.<sup>2</sup> Religious studies scholars have argued, moreover, that within the corpus of Hindu texts there is no word for religion as it is used in Western contexts (e.g. Brian Smith 1987: 34; Wilfred Smith 1962: 63; Renou 1961: 18). If dialogue is limited to a comparison between a science and a religion, there is a risk of imposing external concepts on the *Bhāgavata*, and avoiding this limitation allows a careful examination of the ways Vaiṣṇava thought and practice might respond to and add new insights to the science-religion dialogue in ways not yet envisioned. Consequently a dialogue between the *Bhāgavata* and the natural sciences is also a dialogue between the *Bhāgavata* and science-religion as it has developed in Western intellectual history.

The *Bhāgavata* is an ideal Hindu text to draw upon for a scientific and theological dialogue because of its inherent interest in acquiring a correct and factual understanding of the natural world in the context of a theistic, devotional worldview focused on spiritual perfection. In other words, the *Bhāgavata* shows a concern for both worldly and other-worldly knowledge. Even the structure of the *Bhāgavata* is designed in a manner which suggests a relationship between science and religion. The early books of the *Bhāgavata* contain a sustained argument that a correct understanding of nature is a necessary precondition for understanding God, in particular in Kṛṣṇa's divine relationship with the Gopīs (cowheard girls) of

---

<sup>2</sup> Some well-known examples of scientists and philosophers who have tried to use science as a weapon against religious ideas, Christianity in particular, are: Peter Atkins 1995, 2006; John Brockman, editor 2007; Paul Churchland 2002; Richard Dawkins 2006; Daniel Dennett 2006; E O Wilson 1998.

Vṛndāvana, described in Book Ten. Inquiries about the characteristics of God in the *Bhāgavata* always begin with an inquiry into the origin, development, structure and destruction of the natural world. The student of the *Bhāgavata* is thus led from the empirical and phenomenon-based observation to a perception of the subtle and transcendent; the study of nature is seen as a step on the path of devotion. Moreover, unlike other branches of Indian thought and practice, such as Advaita-Vedānta (non-dualism) and classical Sāṃkhya, the *Bhāgavata* expresses a personalistic theism which emphasizes the formation of the world by a personal God and it affirms the reality of the world. An examination of the *Bhāgavata* can break down hardened, and often naive, distinctions between science and religion in that it shows interest in both devotion to a personal God and the study of the natural world.

The *Bhāgavata* appears to open a dialogue with a number of indigenous Indian sciences such as Sāṃkhya, atomism, and various cosmologies and cosmographies. It does this to argue that Kṛṣṇa, the Supreme Lord of all, is the ultimate object to be known and worshipped through the learning of these sciences; thus it intertwines statements about God and nature. However, the dynamics of the relationship between statements about nature and God within the *Bhāgavata* is also an under-explored area; this is examined here, and ways in which this sheds light on the relationship between science and religion as it has developed in the West.

Some scholars involved in the science-religion dialogue argue against the scientific materialism preached by evangelical atheists.<sup>3</sup> The *Bhāgavata*'s synthesis of discussion of God and nature is shown in parallel with Christian natural theology and contemporary discussions on science and religion, and the scope of these parallels is clarified and new points of view established which incorporate the *Bhāgavata*'s specific theological and philosophical contributions.

This thesis also aims to contribute to existing literature on Hinduism and science.<sup>4</sup> Within the corpus of Hindu thought there is robust discussion among different Indian schools, such as Śaṅkara's engagement with Sāṃkhya and Yoga, Rāmānuja's and Madhva's attack on Śaṅkara's monistic interpretation of Vedānta, Abhinava-gupta's criticism of Buddhism and Vaiṣṇavism, the Mīmāṃsā critique of Buddhist theories of language, and vigorous discussion about the relationship between Purāṇic and Siddhāntic cosmologies. There is a remarkable theological and philosophical dialogue and debate among scholars who adhere to particular traditions within Hinduism, but scholars of Hinduism have yet to apply the same level of rigor and sophistication to an analysis of the relationships between Hindu

---

<sup>3</sup> Some prominent examples of scholars and scientists who directly challenge the idea that scientific theory and practice are a foe religion: Clayton and Schaal, editors (2007); Alister McGrath 2004, 2006a; Arthur Peacocke 2001; Allan Wallace 2000, 2006; Keith Ward 1996, 2004.

<sup>4</sup> The following is a list of all academic publications I have been able to find on Hinduism and science. While many of them are good, I do not vouch for the quality and/or accuracy of all of them; I have simply provided a list of what has been written: Aklujkar 2001; Angle 1994; Balslev 2001; Bhattacharyya 2006; Bhaktivedānta 1979; Brown 2002, 2007; Chapple 2000; Coward 2003; Crawford 2003; Cremo 2004, 1999, 1996; Dasa, Ravindra 1993; Das, Sadaputa 1994; Edwards 1996; Goldberg 2005; Gosling 1976, 2001, 2007; Goswami, Amit 2001; Jones 1986; Killingley 1982, 1990, 1995; Larson 2003; Menon 2006; Nikhilananda 1959; Raman 2002, 2003, 2005; Ranganathananda 1991; Rensch 1964; Rindfleish 2007; Rothstein 1996, 2004; Subarayappa 2006; Sarukkai 2005; Singh 1987; Sriraman and Benesch 2005; Thompson 2000; Utukuru 2006.

thought and the natural sciences as they have developed in the West. This thesis expands the range of topics that Hindu thought can be employed to engage with.

One reason for this lack of engagement with Western thought may be that there are so many aspects of Hindu thought that could easily lead to a dismissive attitude towards the sort of empirical knowledge that scientists require. These attitudes have to do the idea that Hinduism is concerned solely with other-worldly knowledge rather than the knowledge of science in this world; these attitudes are discussed and deconstructed in Chapters 2-5. Another reason might be that the actual theories under discussion in each tradition, for instance the Sāṃkhya and cosmography of the *Bhāgavata*, as distinct from the “Big Bang” cosmology and Darwinism of contemporary science, clearly have such different philosophical and theoretical presuppositions that it seem impossible to establish a constructive dialogue. Dialogue may also have been neglected because many contemporary Hindus often feel the sciences deal with practical and technological aspects of life, but that they are unrelated to and distinct from the religious concerns associated with Hinduism (for example daily rituals, public worship, rules about the purity of food, rituals for the birth of children, etc.). Another reason may be that some traditional Hindu gurus, such as Bhaktivedanta Swami (1979), argue that all theoretical knowledge about the natural world can be understood from reading the Vedas, or traditional Hindu scriptures. For followers of these views science is unimportant and dialogue with it simply unnecessary.

It should be noted, however, that although Buddhists share many of the same difficulties with discussion between science and religion as Hindus, this has not prevented them from generating a large body of science-religion scholarship.<sup>5</sup> Since 1987, the Dalai Lama and many of his leading students have met scholars and scientists annually under the auspices of the Mind and Life Institute, and the result has been remarkably productive. An additional question running throughout this thesis is why Buddhists have taken the natural sciences seriously enough to engage in dialogue, while few Hindus have.

The situation for dialogue between Hinduism and science is not helped by the fact that the few previous book-length attempts to develop relationships between Hinduism and science have been careless, like for example Fritjof Capra's best-selling book *Tao of Physics* (1976). Capra's view that Hinduism, Buddhism and Taoism can all be reduced to more or less the same "mystical" view is highly contentious (23); even within Hinduism one finds a wide variety of views. Although Capra considers himself an authority on Eastern mysticism and informs the reader about how the East was and how it should be, he makes no reference to the personal, devotional and theistic strands of Hindu thought and practice. To support his presentation of the "Eastern worldview" he selectively quotes from poor translations of Eastern texts without showing awareness of their various interpretations and their context within Eastern traditions.

---

<sup>5</sup> Some examples are Alan Wallace 1999, 2000, 2003; Ratanakul 2002; Ricard 2001.

A central problem in Capra's work is a careless use of words like nature, matter, ultimate reality, mind, body and spirit as translations for Eastern views on these topics; he neglects all standards of comparative philology and theology. He scorns Descartes, for example, for dividing the world into two categories: mind and matter (28, 140). In an effort to contrast the dualistic and mechanistic worldviews of Descartes and Newton with the unitary worldview of contemporary physics and Eastern mysticism, Capra writes:

For the Eastern mystic, all things and events perceived by the senses are interrelated, connected, and are but different aspects or manifestations of the same ultimate reality. Our tendency to divide the perceived world into individual and separate things and to experience ourselves as isolated egos in this world is seen as an illusion which comes from our measuring and categorizing mentality (29).<sup>6</sup>

Yet Capra's emphasis on Eastern tendencies towards a non-division of reality is misleading. He makes no note of major Hindu schools like Sāṃkhya, Vaiśeṣika, Vedānta and Nyāya, which are known for their fine distinctions between different parts of the world. Moreover, Sāṃkhya and Vedānta are adamant about the ontological distinction between self (*puruṣa*) and nature (*prakṛti*), something Capra also does not recognize. Rather than seeing the "measuring mentality" as based on illusion, it was seen as a way of gaining knowledge and thus of freeing oneself from illusion. Certain traditions within these schools of thought also maintain the

---

<sup>6</sup> For a detailed criticism of Capra's view of Western thinkers like Descartes, see Brooke and Cantor (1998: Chapter 3).

plurality of individual consciousnesses,<sup>7</sup> which is not mentioned in Capra's caricature of Eastern thought.

Lastly, this thesis could fulfill a need highlighted by Gerald Larson (2005: 1017), who argues that we currently lack “the kind of Indian philosophizing that takes the insights of Indian philosophy and utilizes them in thinking creatively about contemporary issues.” Karl Potter (1963: 257) noted a similar need in his groundbreaking book *Presuppositions of India's Philosophies*:

I believe that many Indian philosophers and practically all Western ones are under the impression that Indian thought has nothing relevant to say to the kinds of problems that the Western tradition in philosophy has developed over the centuries. Furthermore, so strong is the domination of Western ways of thinking over most Indian thinkers who are writing and teaching in India that there is, I am afraid, a real danger that the relevance of classical Indian thought to recurrent problems of philosophy may be lost sight of and the whole tradition lapse from want of attention.

Potter goes on to state that many Indians see their own philosophical tradition as an “interesting historical phenomenon” but not as “living ideas” that can be engaged within contemporary Western philosophy (258). This need highlighted by Potter and Larson is even greater with regard to the science-religion dialogue, and it seems that the points Potter and Larson have raised need to be extended to cover scientific issues, since science has become so influential on contemporary philosophy and theology.

---

<sup>7</sup> For instance, early Vaiśeṣika authors argued there is one isolated consciousness for each body, and that the distinctions between souls remained even after death.

There are a number of potential problems that must be faced, despite the positive reasons for dialogue. Firstly, without sufficient linguistic and conceptual knowledge of each tradition, it is inevitable that one will end up using concepts from one's own intellectual heritage to interpret the other. One is therefore liable to impose Western, twenty-first century concepts on the *Bhāgavata*, and thus misunderstand it, and conversely, contemporary science may be misinterpreted through an erroneous imposition of the concepts of the *Bhāgavata*. Either mistake will lead to a poor comparison and an artificial dialogue.

The same problem faces people engaged in dialogue between science and Christianity. Christians have dealt with this problem admirably by constructing a discourse among scholars who can straddle both worlds, that of the scientist and that of the Christian theologian. But for the Christian this is not such a daunting task as in the case of Hindu traditions, for Christianity and science emerged in the same intellectual context of Abrahamic-based theologies, and Christian theologians have constantly adapted to current scientific theories. Many of the greatest scientists, like Copernicus, Bacon, Galileo, Newton, Descartes, Kepler, Darwin, Mendel, and Einstein, were also well-versed in aspects of Christian, Jewish, and Islamic theologies and culture. There have, however, been no founders of major scientific theories or practices who were also knowledgeable of and inspired by Hinduism, and so there

exists a “double-problem,” to use the phrase of John Brooke,<sup>8</sup> because the *Bhāgavata* exists far outside the Judeo-Christian worldview in which modern science emerged.

I suggest that a solution to this problem requires the development of a “third language,” a language that forms a bridge between the concepts found in the texts. Learning this third language will demand a detailed understanding of the theological, ontological, epistemological and teleological presuppositions of each tradition, as well as knowledge of the process(es) of comparative thought. At the same time, it is important to recognize the danger of misinterpreting either tradition in an effort to discuss them, but I hope to show that a meaningful dialogue is possible.

A large part of any dialogue is comparison, and scholars have argued that through comparison we can come to a *better* understanding of a subject. Richard Jones (1986: 3) writes in *Science and Mysticism: A Comparative Study of Western Natural Science, Theravada Buddhism, and Advaita Vedanta*:

The justification for comparative studies is that they often bring to light aspects and presuppositions of both compared subjects that are not apparent when the focus of attention is restricted to more limited topics within only one subject.

There are reasons to think that comparison and dialogue are themselves indigenous to Indian tradition. In Vedāntic discourse, of which the *Bhāgavata* is part, the final conclusion (siddhānta) is always established after reflecting on an opposing

---

<sup>8</sup> Personal communication. This problem also faces Buddhists, but so far they have dealt with them with greater detail and sophistication than Hindus.

argument (pūrva-pakṣa). Vedāntic scholars tried to clear all doubts (saṁdeha) from their theses (viśaya) by a vigorous examination of other schools of thought. The formal process of reasoning was thus:

- (1) The thesis is presented (viśaya)
- (2) A doubt is raised about that thesis (saṁdeha)
- (3) Based on that doubt, a criticism or counter-argument is formulated (pūrva-pakṣa)
- (4) The thesis is re-presented in the light of and in response to the criticism (siddhānta).

By the process of carefully comprehending, articulating and responding to the other's point of view, Vedāntic scholars came to a more profound and detailed articulation of their own view. Similarly, it is to be hoped that a dialogue between the thought systems of the *Bhāgavata* and of modern science will lead to a better understanding of each. The use of contemporary biological theory as a counter-argument (pūrva-pakṣa) to the *Bhāgavata*'s thesis is perhaps the best way to bring an example of Hindu devotional literature into a creative discussion with biology, one of the most inspiring areas for dialogue between science and religion.

Aside from an incorrect understanding of the other, a second issue of concern is the role of the *Bhāgavata* itself. It is undeniably a twenty-first century concern (even obsession) that scientific beliefs should not be meddled with or analyzed in the terms of beliefs derived from "religious" texts. If any concept of sin is held among many of the biologists and philosophers discussed below, it is the sin of imposing religious beliefs on science, or using religion as a heuristic tool in science. Many scientists do not want ideas derived from sources other than a purported

objective analysis of the natural world to be inserted into science and thereby taint scientific research or the interpretation of science. However, this not a Hindu attempt to analyze the findings of modern science in terms of a sectarian scripture, nor is this a religiously-biased intrusion on science, but an examination of the presuppositions each tradition brings to the study of nature.

A third potential problem is that of obscurity. Is anyone interested in what an Indian theological text has to say about the study of biology, especially considering that modern science has made definitive claims and satisfying progress? In response to this, it must be pointed out that the *Bhāgavata* is central to the life and practice of Gauḍīya-Vaiṣṇavas, or Caitanya-Vaiṣṇavas, who make up a large part of the Hindus in North India, as well as a large number of Western-born Hindus, and it is a cornerstone of Hindu theology, practices, ethics, attitudes and philosophy. Daniel Sheridan (1986: 2) writes, “Three Vaishnava schools, founded by Madhva, Vallabha, and Caitanya, view its teachings as authoritative. It is the main channel through which the stories and legends about Kṛṣṇa have entered the length and breadth of Hindu civilization.” The *Bhāgavata* has significantly influenced both intellectual and popular culture, and therefore it is certainly important to a significant number of people.

This thesis could be of value to those Hindus interested in understanding the relationships between their tradition and biological science. Hindus do wonder about the relationship between Hinduism and science, as can be seen in the recent

writings by Hindus on science and religion (Raman 2002, 2003; Goswami, Amit 2001; Utukuru 2006; Sarukkai 2005). It could also be of interest to those scientists and philosophers who are not Hindus, but are interested in those aspects of Hindu thought that might contribute to their understanding of science. Brian Goodwin (1994: 214), a biologist, concludes his book *How the Leopard Changed its Spots* by suggesting that self-organizing complexity theorists might draw insights and concepts from the ancient Purāṇic notion that the world process is the līlā, or divine play, of God. The Christian theologian Arthur Peacocke (2001: 479) also uses līlā to discuss theistic interpretations of Darwinian evolution.

Having examined some of the reasons for this dialogue, I shall now look at the linguistic and methodological issues involved.