Appendices
## Appendix I

### Chronology of Swami Vivekananda’s Life and Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1863</td>
<td>12 January, Birth of Swami Vivekananda</td>
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<tr>
<td>1882</td>
<td>15 January, First meeting of Narendra with Sri Ramakrishna at Dakshineswar.</td>
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<td></td>
<td>25 February, Death of Narendra’s father.</td>
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<td>1886</td>
<td>16 August, Ramakrishna’s <em>mahasamadhi</em>.</td>
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<tr>
<td>1890</td>
<td>July, Narendra sets out as a wandering monk.</td>
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<tr>
<td>1892</td>
<td>24th, 25th, 26th December, Swamiji at Kanyakumari.</td>
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<tr>
<td>1893</td>
<td>January, Swamiji at Madras.</td>
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<td></td>
<td>31 May, Swami Vivekananda sets sail for America.</td>
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<td></td>
<td>28 July, Swami Vivekananda reaches Chicago.</td>
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<td></td>
<td>21 August, Swami Vivekananda lectures to the Ramabai Circle at Boston.</td>
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<td></td>
<td>10 September, Swami Vivekananda returns to Chicago.</td>
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<td></td>
<td>11-27 September, Swami Vivekananda at the Parliament of Religions.</td>
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<td></td>
<td>19 September, Swami Vivekananda reads his paper on Hinduism at the Parliament.</td>
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<td></td>
<td>28 December, Swami Vivekananda at Chicago.</td>
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<tr>
<td>1894</td>
<td>24 April-6 May, Swami Vivekananda at New York.</td>
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<td></td>
<td>28 December, Swami Vivekananda at New York and Brooklyn.</td>
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</table>
1895  7 June, Swami Vivekananda at Percy; has nirvikalpa samadhi.

17 August, Swami Vivekananda sets sail for Europe.

6 December, Swami Vivekananda returns to New York.

1896  25 March, Swami Vivekananda delivers his so-called Harvard Lecture at Harvard University.

5 April, Swami Vivekananda sets out on second visit to England.

16 December, Swami Vivekananda leaves England for India.

1897  15 January, Swami Vivekananda reaches Colombo.

6 February, Swami Vivekananda at Madras.

8 March, Swami Vivekananda leaves for Darjeeling.

1 May, Foundation of the Ramakrishna Mission.

27, 28 July, Swami Vivekananda lectures at Almora.

1898  21 January, Swami Vivekananda returns to Calcutta.

28 January, Miss Noble arrives in Calcutta.

6 February, Swami Vivekananda inaugurates Ramakrishna temple at Ramakrishnapur (Howrah).

25 March, Swami Vivekananda ordains Miss Noble a brahmacharini and gives her the name Nivedita.

2 August, Swami Vivekananda accompanied by Nivedita, visits the Cave of Amarnath on pilgrimage.

9 December, Ramakrishna’s picture installed at Belur Math.

1899  2 January, Belur Math occupied by the monks.

25 March, Swami Vivekananda ordains Nivedita as a naishthiki brahmacharini.

31 July, Swami Vivekananda reaches London.

16 August, Swami Vivekananda leaves for New York.
7 November, Swami Vivekananda at New York.

23 November, Swami Vivekananda at Chicago.

1900

29 May, Swami Vivekananda leaves San Francisco.

9 December, Swami Vivekananda reaches Belur Math.

27 December, Swami Vivekananda leaves for Mayavati.

1901

18 March, Swami Vivekananda leaves Calcutta for pilgrimage in Eastern India.

1902

4 July, Mahasamadhi.
Appendix II

Chronology of Walt Whitman’s Life and Events

1819  Born May 31 at West Hills, near Huntington, Long Island.
1823  May 27, Whitman family moves to Brooklyn.
1825-30 Attends public school in Brooklyn.
1830  Office boy for doctor, lawyer.
1830-34 Learns printing trade.
1835  Printer in New York City until great fire August 12.
1836-38 Summer of 1836, begins teaching at East Norwich, Long Island; by winter 1837-38 has taught at Hempstead, Babylon, Long Swamp, and Smithtown.
1838-39 Edits weekly newspaper, the Long Islander, at Huntington.
1840-41 Autumn, 1840, campaigns for Van Buren; then teaches school at Trimming Square, Woodbury, Dix Hills, and Whitestone.
1841  May, goes to New York City to work as printer in New World office; begins writing for the Democratic Review.
1842  Spring, edits a daily newspaper in New York City, the Aurora; edits Evening Tattler for short time.
1845-46 August, returns to Brooklyn, writes for Long Island Star from September until March.
1846-48 From March, 1846, until January, 1848, edits Brooklyn Daily Eagle; February, 1848, goes to New Orleans to work on the Crescent; leaves May 27 and returns via Mississippi and Great Lakes.
1848-49 September 9, 1848, to September 11, 1849, edits a “free soil” newspaper, the Brooklyn Freeman.
1850-54 Operates printing office and stationery store; does free-lance journalism; builds and speculate in houses.
1855  Early July, *Leaves of Grass* is printed by Rome Brothers in Brooklyn; father dies July 11; Emerson writes to poet on July 21.

1856  Writes for *Life Illustrated*; publishes second edition of *Leaves of Grass* in summer and writes “The Eighteenth Presidency!”

1857-59  From spring of 1857 until about summer of 1859 edits the Brooklyn *Times*; unemployed winter of 1859-60; frequents Pfaff’s bohemian restaurant.

1860  March, goes to Boston to see third edition of *Leaves of Grass* through the press.

1861  April 12, Civil War begins; George Whitman enlists.

1862  December, goes to Fredericksburg, Virginia, scene of recent battle in which George was wounded, stays in camp two weeks.

1863  Remains in Washington, D.C., working part-time in Army Pay-master’s office; visits soldiers in hospitals.

1864  June 22, returns to Brooklyn because of illness.

1865  January 24, appointed clerk in Department of Interior, returns to Washington; meets Peter Doyle; witnesses Lincoln’s second inauguration; Lincoln assassinated, April 14; May, *Drum-Taps* is printed; June 30, is discharged from position by Secretary James Harlan but re-employed next day in Attorney General’s office; autumn, prints *Drum-Taps and Sequel*, containing “When Lilacs Last in the Dooryard Bloom’d.”

1866  William D. O’Connor publishes *The Good Gray Poet*.

1867  John Burroughs publishes *Notes on Walt Whitman as Poet and Person*; July 6, William Michael Rossetti publishes article on Whitman’s poetry in London *Chronicle*; “Democracy” (part of *Democratic Vistas*) published in December *Galaxy*.

1868  Rossetti’s *Poems of Walt Whitman* (selected and expurgated) published in England; “Personalism” (second part of *Democratic Vistas*) in May *Galaxy*; second issue of fourth edition of *Leaves of Grass*, with *Drum-Taps and Sequel* added.

1869  Mrs. Anne Gilchrist reads Rossetti edition and falls in love with the poet.
1870 July, is very depressed for unknown reasons; prints fifth edition of Leaves of Grass, and Democratic Vistas and Passage to India, all dated 1871.

1871 September 3, Mrs. Gilchrist's first love letter; September 7, reads "After All Not to Create Only" at opening of American Institute Exhibition in New York.

1872 June 26, reads "As a Strong Bird on Pinions Free" at Dartmouth College commencement.

1873 January 23, suffers paralytic stroke; mother dies May 23; unable to work, stays with brother George in Camden, New Jersey.

1874 "Song of the Redwood-Tree" and "Prayer of Columbus."

1875 Prepares Centennial Edition of Leaves of Grass and Two Rivulets (dated 1876).

1876 Controversy in British and American press over America's neglect of Whitman; spring, meets Harry Stafford, and begins recuperation at Stafford farm, at Timber Creek; September, Mrs. Gilchrist arrives and rents house in Philadelphia.

1877 January 28, gives lecture on Tom Paine in Philadelphia; goes to New York in March and is painted by George W. Waters; during summer gains strength by sun-bathing at Timber Creek.

1878 Spring, too weak to give projected Lincoln lecture, but in June visits J.H. Johnston and John Burroughs in New York.

1879 April to June, in New York, where he gives first Lincoln lecture, and says farewell to Mrs. Gilchrist, who returns to England; September, goes to the West for the first time and visits Colorado; because of illness remains in St. Louis with his brother Jeff from October to January.

1880 Gives Lincoln lecture in Philadelphia; summer, visits Dr. R.M. Bucke in London, Ontario.

1881 April 15, gives Lincoln lecture in Boston; returns to Boston in August to read proof of Leaves of Grass, being published by James R. Osgood; poems receive final arrangement in this edition.
Meets Oscar Wilde; Osgood ceases to distribute *Leaves of Grass* because District Attorney threatens prosecution unless the book is expurgated; publication is resumed in June by Rees Welsh in Philadelphia, who also publishes *Specimen Days and Collect*; both books transferred to David McKay, Philadelphia.

Dr. Bucke publishes *Walt Whitman*, a critical study closely "edited" by the poet.

Buys house on Mickle Street, Camden, New Jersey.

In poor health; friends buy a horse and phaeton so that the poet will not be "house-tied"; November 29, Mrs. Gilchrist dies.

Gives Lincoln lecture four times in Elkton, Maryland, Camden, Philadelphia, and Haddonfield, New Jersey; is painted by John White Alexander.

Gives Lincoln lecture in New York; is painted by Thomas Eakins.

Horace Traubel raises funds for doctors and nurses; *November Boughs* printed; money sent from England.

70\(^{th}\) birthday, proceedings published in *Camden's Compliments*.

Writes angry letter to J.A. Symonds, dated August 19, denouncing Symond’s interpretation of “Calamus” poems, claims six illegitimate children.

*Good-Bye My Fancy* is printed, and the “death-bed edition” of *Leaves of Grass* (dated 1891-2).

Dies March 26, buried in Harleigh Cemetery, Camden, New Jersey.
Quantum Physics and Advaita: A Focus on Mutual Influences Leading to a Synthesis

J. V. Jeeva,
Selection Grade Lecturer in English,
Pioneer Kumaraswamy College, Nagercoil, K.K. Dist.

This paper focuses on the mutual influences between quantum physics and Advaita which lead to a synthesis of the two. The modern era is in the need for a scientific orientation of spirituality and a spiritual orientation of science. Science and spirituality are complementary to each other, and hence for the last three decades, efforts have been made to find parallels between the two disciplines. Some overlapping areas of interest have been detected between science and transcendentalism; physics and metaphysics; medical sciences and meditation; quantum physics and mysticism. This researcher concentrates on the semblances between quantum physics and Advaita. The former started flourishing rigorously from the twentieth century, and the latter, advocated by Adi Shankara nearly thousand five hundred years ago, has been considered an integral tenet of the Upanishads till date. These interesting studies make one remember Albert Einstein who once remarked, “Science without religion is blind and religion without Science is lame” (qtd. in Hasija 2). Definitely, a synthesis of science and religion leads to peace, prosperity, and happiness. Modern physics or quantum physics has had a profound influence on almost all aspects of human society. Exploring the relationship between the concepts of modern or quantum physics and the basic ideals of Advaita strengthens the realisation of the need for their unification to reaffirm world peace and non-violence.
The term "physics," etymologically means the endeavor of seeing the essential nature of all things. *Advaita*, which is the essence of *Vedas*, implies that the essential nature of all things is divine, and this divinity enhances "unification" or "wholeness." Quantum physics differs from classical physics. While classical physics attempts to describe the physical reality in concrete, easily understandable terms, quantum physics deals with the probabilities and wave functions. Quantum physics is rigorous in its attempt to describe reality. Quantum mechanics is the mathematical description of the motion and interaction of the subatomic particles in terms of quanta incorporating the idea that particles can also be regarded as waves. Quantum physics differs from classical physics in the sense it deals with the unseen vibrations emitted out of the "consciousness." Max Planck in 1900 proposed that radiation including light was emitted in small units, and he called them "quanta." The wave length of the radiation could determine the amount of energy in quantum. Later, this theory came to be applied to ascertain the behavior of atoms. In 1913, the Danish Physicist, Niels Bohr, applied quantum theory in explaining the structure of the atom and supported Plank's theory of quanta. *Advaita*, which affirms the oneness of individual divinity and the Universal Divinity as *tat-vam-asi* or "That-thou-art," confirms the great power of "vibrations." "Thought" and "intuitive" vibrations are emitted out of the concentration of mind which an individual achieves through "yoga." These "vibrations" are so powerful and positive that they have the power to set right all that are negative.

In the study of the emergence of the universe also quantum physics and *Advaita* find synthesis. The universe is vast, and it seems to have begun with a "Big Bang" in which a fixed amount of energy came from nothing. Observations of the stars and galaxies that make up the universe suggest that they are all moving apart. This means that the very space of which the universe is made is expanding, stretching like the rubber skin of some huge balloon. This proves that about fifteen thousand million years ago, all of space and time must have come out of nothing in a huge explosion which is now called the "Big Bang." The two American physicists, Robert Wilson and Arno Penzias, detected in 1964 that electromagnetic radiation exactly fitted for the predictions of the "Big Bang" theory. Much of the energy took the form of matter in the early universe, but some of it still remains as a "record" of the "Big Bang."
This “record” is the “radiation” that Wilson and Penzias detected. According to the “Big Bang” theory, all space and time were created at a single point far smaller than an atom. That particular point must have contained all the energy of the universe, and it must have been incredibly hot. There must have been a "push" rather than a “pull force” or “an inflation” not “explosion.” At the end of this very rapid inflation, the universe became cooler, and the particles that made up matter began to form out of some of the energy. Just as water vapour condenses to form water droplets as it cools, so matter was formed from "condensed" energy as the universe cooled. In 1992, the American COBE (Cosmic Background Explorer) satellite gathered information about the radiation that fills space. According to the quantum physicists, the total universe emerged from a powerful singular force or energy. Albert Einstein, in 1905, initiated two revolutionary trends of thought. One was his special theory of relativity, and the other was a new way of looking at electromagnetic radiation which was characteristic of quantum theory, the theory of atomic phenomena.

Einstein strongly believed in nature’s inherent harmony, and his deepest concern was to find a unified foundation of physics. He began to move towards this goal by constructing a common framework for electrodynamics and mechanics, the two separate theories of classical physics. In relativity theory, therefore, we can never talk about space without talking about time and vice versa. The concepts of space and time are so basic for the description of natural phenomena that their modification entails a modification of the whole framework that one uses to describe nature.

The most important consequence of this modification is the realization that mass is nothing but a form of energy. Even an object at rest has energy stored in its mass, and the relation between the two is given by the famous equation $E=mc^2$, $c$ being the speed of light. His theory is extended to include gravity, that is, the mutual attraction of all massive bodies. His is the elegant theory of gravity, and is widely used in astrophysics and cosmology for the description of the universe at large. In addition to X-rays, other kinds of radiation were discovered which are emitted by the atoms of so-called radioactive substances. The phenomenon of radioactivity gave definite proof of the composite nature of atoms, showing that the atoms of radioactive substances not only emit various types of radiation but also transform themselves into atoms of
completely different substances. The subatomic units of matter are very abstract entities which have a dual aspect. Sometimes they appear as particles, sometimes as waves, and this dual nature is exhibited by light which can take the form of electromagnetic waves or of particles. In modern physics, the universe is thus experienced as a dynamic, inseparable whole. In this experience, the traditional concepts of space and time as isolated objects, and of cause and effect, lose their meaning. Such an experience, however, is very similar to that of the Eastern mystics. The similarity becomes apparent in quantum and relativity theory and becomes even stronger in the "quantum-relativistic" models of subatomic physics where both these theories combine to produce the most striking parallels to Eastern mysticism.

The only philosophy which withstands the test of modern reasoning and quantum theory is Advaita, which was propounded by Adi Shankara more than thousand years ago. To prove this, the researcher quotes the words of Swami Vivekananda, the prophet of spiritualism and nationalism in India during the nineteenth century:

As you all know, the modern physical researches are tending more and more to demonstrate that what is real is but the finer; the gross is simply appearance. However that may be, we have seen that if any theory of religion can stand the test of modern reasoning, it is the Advaita. (CWS 376)

The spiritual source of Hinduism lies in the Vedas, a collection of ancient scriptures recorded by seers. There are four Vedas, the oldest of them being the Rig Veda. Each of these Vedas consists of several parts which were composed at different periods, probably between 1500 and 500 B.C. The Upanishads contain the essence of Hinduism’s spiritual message. According to the Vedas and the Upanishads, the things and events around us are but different manifestations of the Ultimate Reality. Brahman, the Ultimate Reality, is nothing other than the unseen, the real force which is the cause of this entire creation. Quantum physicists believe that the universe originated from "singularity," and this, according to the philosophers, is the unseen force or energy which becomes the cause of the entire creation, permeates and penetrates each one of the creations. Advaita, a philosophy of monism, believes that “this” is a very big unseen force or power which pervades the cosmos but
envelopes itself even beyond the universe, beyond the solar family; yet it is unlimited. This force or power is the Brahman in \textit{Vedas} or the Ultimate Reality or Atman or Soul or Inner essence of all things. It is infinite and beyond all concepts. It cannot be comprehended by the intellect, nor can it be adequately described in words. \textit{Upanishads} explain this force as incomprehensible Supreme Soul, unlimited, unborn, not to be reasoned about and unthinkable. The several gods in Hindu mythology are but reflections of the one Ultimate Reality. The manifestation of Brahman in the human soul is called \textit{atman} and this \textit{atman} and Brahman are one, and this is the essence of the \textit{Upanishads}. \textit{Upanishads} name Brahman the finest essence which is present in each one’s soul called \textit{atman} and confirms that \textit{atman} and Brahman are the same, “That-art-thou.”

The recurring theme of the Hindu mythology is that the creation of the world is made by the self-sacrifice of God. “Sacrifice” means here “making sacred” and God becomes the world, which in turn becomes again God. This creative activity is called “Lila,” the play of God and the world is seen as the stage of the divine play. Brahman is the great magician who transforms himself into the world, and he performs this feat with his “magic creative power,” which is the meaning of maya. As long as one is not able to see the Divine Brahman within each aspect of maya, one becomes the victim of maya and feels sad always. If all the myriad forms of “Lila” or maya are taken as reality, without perceiving the Brahman within, one cannot get happiness.

An important and influential method of liberation, Hindu mythology states, is yoga, a word which means “to yoke,” that refers to the merger of the individual soul with Brahman. Shiva is represented as the personification of the fineness of Brahman, and his most celebrated appearance is Nataraja, the universal dancer. As the cosmic dancer, Shiva is the God of creation and destruction, who sustains through his dance the endless rhythm of the universe. The dance of Shiva symbolizes not only the cosmic cycles of creation and destruction, but also the daily rhythm of birth and death, which is seen in Indian mysticism as the basis of all existence. Shiva reminds us that the manifold forms in the world are maya, as He keeps creating and dissolving them in the ceaseless flow of His dance. His balancing dance represents the rhythm and unity of life. The dancing posture of Nataraja or Shiva symbolizes many things, and so it is a pictorial allegory. The upper right hand of the Lord holds a drum to symbolize the primal sound of creation; the
upper left hand bears a tongue of flame and
that represents the element of destruction.
The balance of the two hands represents
the dynamic balance of creation and
destruction in the world; the calm and
detached face of Shiva in the centre of the
two hands represents the polarity of creation
and destruction which is dissolved and
transcended. The second right is raised in
the sign of “do not fear;” symbolizing
maintenance, protection, and peace; another
left hand points down to the uplifted foot
symbolizes release from the spell of maya.
The Lord is pictured as dancing on the body
of a demon, the symbol of human ignorance
which has to be conquered before liberation
can be attained.

For the modern physicists, Shiva’s
dance is the dance of subatomic matter. The
exploration of the subatomic world in the
twentieth century has revealed the
intrinsically dynamic nature of matter. It has
shown that the constituents of atoms, the
subatomic particles, are dynamic patterns
which do not exist as isolated entities, but
as integral parts of an inseparable network
of interaction. These interactions involve a
caseless flow of energy manifesting itself
as the exchange of particles, that is a
dynamic interplay in which particles are
created and destroyed without end in a
continual variation of energy patterns. All
atoms and consequently all forms of matter
are composed of three massive particles
such as the proton, the neutron, and the
electron. A fourth particle, the photon,
represents the unit of electromagnetic
radiation. The strong interactions hold the
protons and neutrons together in the atomic
nucleus. They constitute the nuclear force,
the strongest of all forces in nature. Modern
physics has thus revealed that every
subatomic particle performs an “energy
dance,” a pulsating process of creation and
destruction. For the modern physicists,
then, Shiva’s dance is the dance of
subatomic matter. According to Hindu
mythology, it is a continual dance of creation
and destruction involving the whole cosmos,
and this is the basis of all existence and of
all natural phenomena. Indian artists created
visual images of dancing Shiva or Nataraja
statues. Physicists have used modern
technology to portray the patterns of the
cosmic dance. The bubble chamber
photographs of interacting particles bear
testimony to the continual rhythm of creation
and destruction in the universe. The
metaphor of the cosmic dance thus unifies
ancient mythology and modern physics.

The parallels between the views of
physicists and mystics become more
plausible when learning about the other
similarities. Both physicists and mystics follow empirical method. Physicists derive their knowledge from experiments; mystics from meditative insights. Both physicists and mystics make observations in their different fields. Mystics start from the inner realm, but physicists start from the outer world. The harmony between the views of both physicists and mystics confirm the ancient Indian wisdom that Brahman, the Ultimate Reality, is identical to atman, the reality within.

Eastern mystics maintain that all things and events are manifestations of the basic oneness, but they recognize the individuality of things. The same unification of opposite concepts in modern physics can be found at the subatomic level, where particles are both destructible and indestructible; where matter is both continuous and discontinuous, and force and matter are but different aspects of the same phenomenon. The fundamental unity is the basis of the unification of the opposite concepts mentioned above. In the state of deep meditation, the mystics can transcend the dimensional world of everyday life and experience a totally different reality, where all opposites are unified into an organic whole. In the expression of this experience in words, the mystics experience the same problems as the physicists try to interpret the multidimensional reality of relativistic physics. The four-dimensional world of relativity theory is not the only example in modern physics where seemingly contradictory and irreconcilable concepts are seen to be nothing more than different aspects of the same reality. At the atomic level, matter appears as particles and as waves. Particles are also waves, waves are also particles. Electrons, too, behave like waves. Mystics also believe in the effect of power of vibrations or waves and affirm that one's positive vibrations bring positive effects.

The semblances of quantum theory and Advaita have been discussed in a detailed manner by finding correspondences of the two from the very basis itself. This knowledge gives everyone a new experience, joy, and inspiration. The similarities of quantum theory and Advaita seem to be beyond any doubt. Max Planck, the father of quantum mechanics, writes thus: "Science...means unresting endeavour and continually progressing development toward an aim which the poetic intuition may apprehend, but which the intellect can never fully grasp" (qtd. in Zukav Gary 313). The intellectual findings and intuitive powers merge suggesting the synthesis of quantum physics and Advaita. The researcher has the firm conviction that the realisation of the unification of the two reaffirms the importance of world peace and non-violence.
Works Cited


Appendix - IV

Illustration Showcasing Symbolically the Confluence of the Philosophies of Swami Vivekananda and Walt Whitman in Advaita, the Philosophy Propounded by Adi Shankara