4. Hindu Concept of Monism  
— The Nature of God and the Universe —

Any serious metaphysical inquiry must address the following fundamental issues:

1. Does God exist as an entity, and if so, what is the nature of this entity?
2. What is the nature of the universe and of the individuals such as us? and
3. What is the relationship between God and the universe?

All of these issues have been addressed very logically by the concept of Monism.

The development of the Hindu concept of God follows the earlier approach of going from the known to the unknown. We are surrounded by the universe at all times, and we have a first hand experience of interfacing with the universe. The universe to us is, therefore, an entity that is known, at least partly, although the level of reality of the universe may be debatable. Consequently, it is quite natural for us to start with the universe, before speculating on the existence and the nature of God. In examining the nature of the universe, one can use time regression and ask if our universe had a beginning and if so, when and where it began. Such regression leads to only two
possibilities:

i) the universe had a beginning, that is, it is possible to define an instant of time when the universe was born; or

ii) the universe has no beginning, that is, it has existed forever in the past.

The first possibility would most certainly raise the question of what was before the birth of the universe.

Any examination into the future of the universe would similarly lead to two possibilities:

i) the universe will have an end, that is, it will cease to exist at some point in time in the future; or

ii) it will continue to exist endlessly into the future.

Here, the first possibility would immediately raise the question of what will come after the end of the universe.

There are, therefore, the following four distinct possibilities with respect to the nature of the universe:

i) it has a beginning as well as an end;

ii) it has a beginning but no end;

iii) it has no beginning but has an end; and

iv) it has neither a beginning nor an end.

The words beginning and end are used here in the context of time as we understand it today.

The Hindu view of the universe is that our universe has a beginning, will have an end, and such a life cycle of the universe will repeat endlessly. Our universe began at some point in time in the past, it will grow and expand for some period of time, then it will shrink and contract for some period of time, and will cease to exist at some point in time in the future. The notion of time, as we understand and use it today, is valid only in the context of events happening in one life cycle of our universe. Consequently, once the universe ceases to exist, we
really cannot use words such as *later* and *then*. In the most
generic sense of time, however, this expansion and contraction
cycle of the universe will repeat itself endlessly. For this
expanded sense of time, one may have to define a higher
dimensional time, *supertime*, that is different from the time we
now experience. This supertime will extend infinitely, both
*before* the birth of the universe and *after* the end of the uni-
verse. Our time within our current cycle of expansion and con-
traction is expressed with reference to the beginning of this
cycle. It is somewhat similar to continuously cyclic trigono-
metric functions of *sine* and *cosine*, where angles are refer-
cenced to the beginning of the cycle.

The Hindu concept of God is quite simple and may be
stated as follows. Our universe had a beginning. In the begin-
ning, there was an entity from which this universe began. We
may call this entity X, Y, or Z; we may even call it ABC, PQR, or
STP. We just happen to call it G-O-D. Whatever existed *before*
the beginning of our universe is what Hindus call Brahman, the
Sanskrit language word for God.

Let us first examine the concept of dimensionality and the
nature of God in terms of dimensionality. Imagine a small ant
moving along a long thin thread. The ant thus moves back and
forth along a straight line. The position of the ant at any time is
fully described by just one parameter — its distance from any
point of reference on that line. If the reference point is
changed, the value of the parameter will be changed; but even
then, just one parameter will define its position. This is pre-
cisely why the universe of this ant is considered to be one-
dimensional (1-D). Furthermore, this ant would simply not
understand any higher dimensional universe; it could not pos-
sibly imagine what the words up, down, and sideways mean. If,
however, the ant is allowed to move on a large sheet of paper
placed flat on the floor, the ant’s universe would become two-
dimensional (2-D). One now needs two parameters to define
the position of the ant: for example, a certain distance North
or South, and a certain distance East or West from a given point.
of reference. Even if some other coordinate system were used, one would still need only two parameters; in polar system, for example, one would need a radius and an angle as the two parameters. Also, this ant would not be able to imagine any universe having more than two dimensions; it would, however, understand the predicament of the 1-D ant. The same concept of dimensionality can be easily extended to 3, 4, or more dimensions. The universe we move in was considered to be three-dimensional (3-D) because we can also move up or down, in addition to north or south, and east or west with reference to any reference point. This Newtonian way of thinking presupposed that time is absolute, although space is relative. At the beginning of the twentieth century, however, Albert Einstein introduced a relativistic universe where even time is not absolute; he defined the spacetime as a four-dimensional (4-D) reality that includes both space and time. Other scientists have found it necessary to define an even higher-dimensional universe so that certain physical interactions that occurred between various sub-atomic particles immediately after the Big Bang can be explained. Just as the above 1-D ant cannot imagine any 2-D or higher dimensional universe, we cannot imagine any of these higher dimensional universes; they can only be understood with the help of advanced mathematics.

God is beyond the 4-D spacetime as we know it. It is also beyond the higher dimensional universes defined by some scientists. In terms of dimensionality, God is infinite dimensional continuum. At the time of the beginning of the universe, God transformed self into the universe. The universe is then the four-dimensional projection of God. Every element of the universe such as non-living matter and living matter including each one of us humans is a 4-D projection of God. God continues to exist as the ultimate reality (UR) before, during, and after each cycle of expansion and contraction of the universe. The universe is then a virtual reality (VR). In the most technical sense of the VR paradigm, this VR environment offers a total, real time, four dimensional, stereoscopic, auditory, and forcesensitive touch immersion for the participant. It feels so real
that we do not even attempt to seek any reality beyond the reality of this universe. God is the only and eternal ultimate reality. Universe is a transitory, 4-D projection of God and presents itself to the participant as a virtual reality (VR) environment with almost perfect immersion.

Let us now explore the unique relationship between God (UR) and the universe (VR). According to the Hindu Concept of Monism, both are one and the same, but in different form; one is UR and the other is VR. God is not the creator of the universe; God is the universe. When a creator creates something, his creation is distinctly different from himself. After the act of creation, one can point to the creator as well as to his creation. There is a duality between the two. This is a dualist relationship. When a sculptor creates a piece of art, we have two separate entities: the sculptor and the sculpture. God-universe relationship is not like a creator-creation or a sculptor-sculpture relationship. It is not a dualist relationship. Now imagine a goldsmith working in his shop making gold ornaments. Let us suppose he makes a set of earrings, a necklace, and a ring. The goldsmith, with the use of his instruments and his labor, has essentially transformed the piece of gold into different shapes and sizes. In the VR world, we see the ring, the necklace, and the earrings, as three separate entities. However, on a higher level of reality, all these three are pure gold. The goldsmith and the necklace have a dualist relationship. The gold, on the other hand, has a monist relationship between itself and the necklace or the ring. The two — gold and the necklace — are identical, and there is ultimately no difference between the two. If the necklace is melted into a liquid form, it ceases to be a necklace, but it is still pure gold. The gold and the necklace can be transformed back and forth from one form into another. Gold is eternal whereas the necklace is transitory. The gold (UR) continues to exist whether or not it is transformed into an ornament (VR).

A bail of cotton similarly gets transformed successively into thread, cloth, and clothing. The cotton, the thread, the cloth,
A monist relation between presidents’ heads and Mount Rushmore
and the clothing have a monist relationship among themselves. They are one and the same. After spinning a thread and weaving a cloth, we really should not ask where the cotton and the thread are. Cotton is the ultimate reality; it continues to exist before and after its successive transformations into thread and cloth. Mount Rushmore and the four Presidents carved in it have a monist relationship. Imagine an ice sculpture showing a bride and the groom cutting the wedding cake. The bride, the groom, their clothes, the cake, the knife, and every component of the sculpture have a monist relationship with the water used to make the block of ice used for the sculpture. The difference between all these components is virtual, not real. They are different in the VR world; they are, however, identical in the UR world. God and the universe have precisely this kind of monist relationship.

God-universe relationship is also not causal in nature. They are not a cause-and-effect pair. Cause and effect bear only a unidirectional relationship. Cause precedes the effect. It is a time-dependent relationship. Also, the two are identifiably different and real. The Hindu concept of monism is that only God is the ultimate reality and the universe is only a virtual environment. At the time of the birth of the universe in each cycle, God transforms self into the universe. When the universe ends, the VR environment collapses, and God, the UR continues to exist as an entity beyond the spacetime we experience. It is as if the cause is real but the effect is unreal and virtual. If both were real, then the cause-effect relationship would have to be bidirectional — both causing each other at some point in time.

Let us now examine some of the characteristics that logically must be associated as well as those that cannot possibly be associated with this entity we call God. First, God cannot be a man, or for that matter, a woman. The genders of male and female are defined only in the context of sexual reproduction of life forms. Consequently, the terms male and female have no meaning and are irrelevant outside this context. We do not ask if a chair, or an automobile, or sugar is male or female. If
someone raised the issue of gender of these things, we would immediately question his sanity. We routinely tolerate such debates about God however. The entire issue of a woman’s place in the church is settled by some on the basis of a notion that God is male. It is quite obvious why God is assumed to be a male. If a committee of cows and birds were to describe God, it would be a flying cow. The concept of God as a man or a woman really insults human intelligence. If God were to be a 4-D life form made of physical matter, additional questions arise: where does God live now? where did God live before the universe was created? and most importantly, who created the matter that forms God? Also, one cannot associate human-like feelings of likes and dislikes, love and hate, rewards and revenge and others with God. Association of such feelings would immediately raise more questions: if God created the universe, then out of its own creation, why would God like or love someone and dislike and hate someone else? what is the basis of his likes and dislikes?

We cannot also associate material qualities such as long or short, hot or cold, heavy or light and others with God. The fundamental problem with these qualities is that they are all comparative in nature. When we say something is long, the inherent question is *long compared to what*. When we say that a picture frame is half a meter long, we really mean that the length of the picture frame is one-half of the distance between two points marked on a particular platinum bar that is kept at a constant temperature at a certain place in Paris, France; the distance between these two points is defined as one meter. Similarly when we say that two certain events are one minute apart, we really mean that the time between the two events is a certain multiple of the period of atomic oscillation of Cesium or of some such element. The point to be made is that the space and time components of our spacetime are *relative*, and are defined in relation to something. Since God exists before and after the life cycle of the universe, there is no spacetime or anything else to compare God with. Simply
any quality defined in a dualist reality cannot be associated with God.

Clearly only those qualities that stand the test of a monist reality could possibly be associated with God. The first and the foremost of these is of existence. In our language of duality, it is eternal existence without a beginning or an end. We must really resist the temptation of adding adjectives before the word existence; these are defined in the context of our dualist reality. It is all right to use these terms to help us understand or explain to others the monist concepts we are attempting to establish. But at some point we must throw away our crutches of duality and firmly enter the monist reality. In the monist reality, we should only say that God exists. The other quality that one can associate with God is that of self-awareness. At some point, God transformed self into the universe we know and experience, and set in motion certain phenomena that will surely lead to the inevitable end of the universe. Consequently, God must be aware of its ability to transform back and forth between itself and the universe.

No other quality can be logically associated with God because it will not pass the test of monist reality. Some thinkers have associated God with the quality of blissfulness. Happiness and unhappiness, however, can be understood only in the context of a dualist reality; consequently, blissfulness does not pass the monist test. Clearly, if it must be one or the other, we would rather like God to be blissful than hateful. Hindu thinkers have attempted to explain this blissfulness in the context of personal experiences of the mystics. All mystics have experienced bliss when they have awakened to the ultimate reality, and they have attached to God this quality of bliss. However, this leads to the question of what is God happy for? There is nothing left outside the reality of God for God to be happy for. The mystics have, therefore, compared this with an infant that sometimes smiles and is happy simply lying on its back. The infant is apparently quite unaware of all cosmic activities except possibly in its close proximity. It does not recognize its parents, or other relatives, or for that matter, anything
around itself. It smiles and is happy with itself. It is in this sense that God is blissful.

The nature of the universe now becomes quite clear. It is dualist for sure; that is, all of its elements or components can be described only in relation to each other. An elephant is bigger than an ant, and a human being, on an average, lives longer than a dog. The universe is not the ultimate reality because it has a finite life cycle. It only presents itself as very real, simply because it is a virtual reality with the fullest known participant immersion. It is only a 4-D projection or manifestation of the ultimate infinite dimensional reality we call God.

The universe consists of animal life forms, plant life forms, and non-living material. It is not necessary to define these and other elements such that the boundaries between the groups are sharp and non-overlapping. Any taxonomy one suggests may be questioned by others, and such taxonomies are not really necessary to understand the philosophical formulations presented by the Hindu Thought. For example, it is not necessary to understand if a virus represents a life form or not. In the context of Hindu philosophy, either possibility can be accommodated. It is also not necessary to argue if non-humans are or can be rational beings. If any other element of the universe is found to be rational, it can be grouped with humans in the context of Hindu Thought. There is also no clear-cut dichotomy of rational and non-rational species of life forms. A monkey, for example, exhibits a number of behaviors that would have to be called partly rational. When a certain type of monkey wants to eat ants, it selects a twig of certain length, shape, and stiffness, and cuts that twig from a tree. It then goes to an anthill, wets the twig by licking it, and selects a spot on the anthill to insert the twig. It then pushes the twig into the anthill, moves it back and forth, and guides it into the chamber where the ants are. A number of ants get stuck to the wet twig. The monkey then pulls the twig out and eats the ants that are sticking to the twig. Many researchers have tried to do this themselves and have found it impossible to do what these
monkeys have been routinely doing for generations. Many other animals also exhibit a limited number of such behaviors that can be termed partially rational.

Clearly, humans exhibit mostly rational behaviors and non-humans exhibit mostly instinctive behaviors. Furthermore, the quality of rational behavior of humans is far more superior to that of other animals. Consequently, Hindu Thought accepts that, in this dualist world, human life is more valuable and more important when compared to non-humans. It does not accept, as many other religions do however, that in a cosmic sense human life is so important that other forms of life are there simply for its enjoyment and benefit.

Let us now examine if these Hindu concepts about the cyclical nature of the universe are in agreement with the generally accepted scientific theories of the universe. The current theories of cosmos have been developed only during the past 70 years or so, and the developments still continue. The cosmologists and astronomers do not yet have a consistent theory that explains all observed phenomena. However, they are fairly certain that the universe had a beginning at what we call the Big Bang. Many scientists also believe that it will have an end in what they call the Big Crunch. There is yet no conclusive evidence for the expected crunch and, without such a proof, we cannot rule out the possibility that, although unlikely, the universe may exist endlessly.

The stars in the sky are far away from the Earth and they all look like point sources of light to us. The only way then to differentiate between the stars is to examine the spectrum of electromagnetic waves emitted by them. If we limit ourselves to the visible spectrum (light waves), we can identify the specific frequencies that are absent from the spectrum, relate those to the specific chemical elements, and thus determine the chemical composition of a star’s atmosphere. When we examine these spectra received from different stars, we find that most of the frequency distributions are similar, except that the frequencies are all shifted by various amounts towards the
red (low frequency) end of the spectrum. To understand the profound meaning of this red shift, we need first to discuss what is known as the Doppler effect. If we stand near a railway crossing and listen to the whistle of a train as the train passes by, we find that the whistle appears to be blowing at higher pitch (high frequency) when the train is approaching the crossing. The same whistle then appears to be blowing at lower pitch as the train goes away from us. The larger the speed of the train, the higher the difference in frequencies. This is the classical Doppler effect where the frequency of a signal received by a stationary observer depends on the velocity of the source relative to the observer. The frequency of the received signal is higher than the source frequency if the source is approaching the observer, and is lower when the source is moving away from the observer. The Doppler effect in the visible spectrum means that a red shift (to lower frequencies) indicates a light source moving away from us; a blue shift (to higher frequencies) on the other hand would indicate a source moving towards us.

The profound meaning of the above red shift is then at once clear — all stars are moving away from us. We also know that the red shift is directly proportional to the distance of the star from us; that is, the more distant the star, faster it is moving away from us. This means that our universe is expanding and the distances between the galaxies are increasing.

If the universe is expanding now, it means, ipso facto, that the universe was smaller in size in the past, and that if we go sufficiently back in time, the universe must have had a beginning. The commonly accepted beginning of our universe is the Big Bang, when the universe began with a big explosion and started to expand. Physicists have developed mathematical models that explain the behavior of the universe from a time very close (10^{-35} second or less) to the Big Bang. As we get closer and closer to the Big Bang, the present concepts of quantum mechanics and relativistic mechanics fail, and one needs higher dimensional models to explain the behavior of
the universe. The instant of the Big Bang is presently considered to be a mathematical singularity.

It is also generally accepted that the temperature of the matter created at the Big Bang was infinitely high (singularity) and that immediately the temperature began to drop at an exponential rate. The temperature is estimated to have dropped to 10 billion Kelvin ($10^{10}$ K) within the first second after the Big Bang. It continued to drop fast and was estimated to be one billion Kelvin at three minutes after the Big Bang. As the universe continued to cool, elementary particles such as electrons and protons, chemical elements such as hydrogen and helium, galaxies, stars, and planets were formed in succession. The present temperature of the universe is about 3 Kelvin, and the cooling continues even today.

Cosmologists around the world unanimously agree today that our universe had a beginning in such a Big Bang. The next obvious question is when did this Big Bang occur, that is, how old is our universe? The scientists predict the age of the universe on the basis of a constant called the Hubble constant. The Hubble constant essentially gives the rate of expansion of the universe. It is estimated to be 15–30 km/s per million light years. This means that if a galaxy is 100 million light years away from us, it is moving away from us at a speed of 1500–3000 km/s. The same constant is also expressed as 50–100 km/s per megaparsec; a megaparsec is equal to 3.26 million light years. The second way is used more often, and the units are usually not written explicitly. The estimated value of the Hubble constant is simply given to be between 50 and 100, and the units, although unwritten, are assumed to be km/s/megaparsec.

If the rate of expansion of the universe is higher, clearly it must have taken a shorter time for the universe to grow to its present size. The age of the universe is, therefore, inversely proportional to the Hubble constant. The larger the constant, smaller is the age of the universe. Until 1994, the age of the universe had been estimated to be 15–20 billion years. In 1994, however, new observations taken with the help of Hubble
telescope suggested that the Hubble constant might be higher than the generally accepted value of 50–100. This would correspond to a much younger universe. More recent observations however indicate the value of the Hubble Constant is 70 ± 7, corresponding to a universe that is 12–13.5 billion years old. It should be noted here that the Hindu thinkers of the past had estimated the age of the universe to be 5–6 billion years. Since the margin of error in all these estimations is quite large, it is remarkable that the estimation made by Hindu thinkers of the distant past is so close to the present estimations.

Let us now examine what scientists know about the future of the universe. It is generally agreed that the fate of our universe depends on its average mass density (kg/m³). The attraction of gravity tends to bring masses together. Consequently, the gravitational attraction between bodies in the universe is opposing the presently ongoing expansion of the universe. This gravitational force depends on the total mass or the mass density of the universe. If this density is less than a specific value, called the critical mass density, the gravitational forces will be unable to stop the expansion of the universe, and the universe will then continue to expand forever without a limit. If the mass density is equal to the critical density, the universe will continue to expand, although at continually decreasing rate, and will asymptotically reach a finite size. If, however, the mass density of the universe is higher than the critical density, the universe will at some future time stop expanding, and will begin to contract due to the gravitational forces. This contraction will eventually lead to the Big Crunch as predicted by the ancient Hindu thinkers. This concept is quite similar to the concept of escape velocity for Earth-orbiting satellites. If a satellite is thrown upwards with a velocity lower than the escape velocity, the satellite will reach a maximum height (depending on the initial velocity) and fall back to Earth. If the initial velocity is equal to the escape velocity, it will orbit the Earth at some distance from the center of the Earth. If, however, the initial velocity is higher than the escape velocity, it
will move away from the Earth endlessly and escape to infinity.

The critical mass density of the universe is also related to the Hubble constant; it is proportional to the square of the Hubble constant. For a Hubble constant of 50–100, the critical mass density is estimated to be $4.5 - 18.0 \times 10^{27}$ kg/m$^3$; this is about 3–12 hydrogen atoms per cubic meter of space.

The present estimates of the mass density based on the known matter in the universe are between 10 to 20 percent of the critical density. However, these estimates may turn out to be highly inaccurate because of two factors. First, the scientists believe that there is a large amount of matter in the known galaxies and in the intergalactic space that has yet not been observed by us because it does not emit any type of radiation. Such matter is referred to as the *dark matter*; its presence has to be inferred by observing other phenomena caused by its presence. Secondly, there is some recent evidence that the elementary particle *neutrino* may not be massless as had been assumed earlier. An international team of physicists, using the underground Super-Kamiokande neutrino detector, has estimated the mass of this subatomic particle to be about one ten-millionth the mass of an electron. That may not sound like much, but some scientists believe that the estimated number of neutrinos present in the universe is sufficiently large such that this infinitesimally small mass, if confirmed by other experiments, may be enough to make the density of the universe more than the critical density. In addition to neutrinos, there is another potential candidate particle for the dark matter. These weakly interacting massive particles (WIMPs) are predicted to exist and to be ten to hundred times heavier than protons. If these particles are found to exist, there are a lot of them in the universe. By one estimate, about ten trillion of them shoot through every kilogram of matter every second. An Italian-Chinese research team, using a detector made of about 100 kg of sodium iodide buried under about one-and-a-half kilometer of rock, has recently reported to have detected these most fervently sought WIMPs. Other teams have not yet
repeated these experiments, and these preliminary results must therefore be considered unverified. Scientists expect to come to a decisive conclusion regarding the existence of WIMPs within the next several years. There is also another way to examine if the mass density of the universe is larger than the critical density. It is to determine if the rate of expansion of the universe is slowing down, and by how much. Although there are a lot of uncertainties in these kinds of measurements and calculations, a recent examination of distant galaxies has shown that the expansion of the universe is indeed slowing down. The rate of slowing down is also close to the rate that would be expected if the universe does have critical mass density. The question whether the universe is closed or open has yet not been conclusively resolved. In fact, some scientists have recently proposed that the universe may continue to expand forever even if the mass density was found to be higher than the critical value. This, they believe, is due to the presence of an entity called the vacuum energy. Clearly, there is no consensus within the scientific community if the data presently supports an ever expanding universe or a universe that will end up in a big crunch in the future. If conclusive evidence is found in the future for a closed universe, the universe will certainly be stuck forever in endless cycles of expansion and contraction as predicted by the early Hindu thinkers.

The concept of monism does not recognize but one entity God as the ultimate reality. Everything else exists only in lower levels of reality. The universe we experience every day is a virtual reality environment, one level below the ultimate reality. We should not find it difficult to understand and accept this formulation because we do recognize lower levels of reality such as seeing a mirage and experiencing one or more levels of dreams. While driving on a highway, many times we think we see a wet road ahead and wonder if the road will be slippery. As we keep driving, the wet spot keeps moving ahead of us, and then we realize that it is just a mirage. Thirsty camel riders crossing the hot sandy deserts are often fooled by a mirage and go after a non-existent oasis in search of water. At
Levels of Reality

Ultimate Reality
Brahman (God)

Virtual Reality
Universe

Lower-Level Reality
Dream Mirage

Increasing Level of Reality
Increasing Level of Illusion
Levels of Reality
the time, the wet spots on the road and the oasis look very much real until we go closer and see the higher level of reality. Similarly, when we dream in our sleep, we travel to distant places, win lotteries, and we are attacked by snakes and ghosts. Sometimes, we even go to sleep in the dream and start dreaming within the dream. Then when we wake up from the second dream, we still continue to experience the first dream. So we do experience lower levels of reality, although we take for granted that the universe we live in is the highest level of reality. The Hindu Thought takes us one step further, and defines the ultimate reality to be one level higher than the virtual reality of the universe.