CHAPTER 1

INTRODUCTION

Evolution connotes a gradual development from simple to a more complex form. Creation, maintenance a dissolution are beginningless and endless phenomena. They are periodical in relation to the whole world. The term ‘evolution’ coined by the social psychologist, Donald Campbell\(^1\), denotes the process of change, organic development, unfolding, movement, transformation.\(^2\) It is derived from the Latin verb *evolvere* which is compounded by the two words *ex-*out and *volvere*-roll.\(^3\) It is closely corresponds to the Sanskrit word ‘*Pariṇāma*’.\(^4\)

Evolution is the theory that all existing forms of plant and animal life developed gradually from earlier and generally simpler

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forms through a long series of small changes. Each change by itself resulted in a minor modification of the organism, but the cumulative effect of many changes over a long period of time was the emergence of new, usually more complex forms. Thus evolution traces the line of development of vastly different living forms back to common ancestries. Historians state: “Evolution is the change with continuity in successive generations of organisms.” From the religious point of view, “Human development is rectilinear and progressive and that mind tends necessarily toward greater and greater rationality and complexity.” Modern psychology is purely evolutionary. It holds man’s behaviour to be developmentally continuous with that of subhuman forms. The social evolutionists comment “Evolution is a process through which societies develop in predictable ways that generally reflect progress towards ‘higher’ or more nearly perfect forms of

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The theory of organic evolution is the hypothesis: “All living things are historically related to a common ancestry and the higher forms of life have evolved by modifications of simpler forms.”

Infinity is a notion which most people find hard to conceive of. Creation myths were accordingly constructed to show that man and the universe did have a beginning. Once created, they thought, things were established forever. Before the idea of the universal change was thrust upon people by evolutionary science, whether they liked it or not, change was regarded with misgivings, as something more apt to result in deterioration than improvement. Deterioration was, indeed, the only kind of ‘evolution’. People could imagine readily: the Age of God is far in the past, the Iron Age is the present lot. Hindu sages combined this with the idea of eternal recurrence – the ages of benevolent Gods are succeeded by ages of less benevolent ones; present is the age of the terrible

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Goddess, Kāli; this will end in a cataclysm; whereupon everything will be repeated from the beginning. Even the ancient Greeks, whose wisdom was so congenial, did not think of evolution. The world had a start, they thought, but it was not growing progressively better. Although man can aspire to see the beauty of eternal ideas, these ideas are distorted, and only dimly reflected in the things met in the world.

As soon as man had attained sufficient intellect to observe the similarities and differences among the animals and plants surrounding him, and to speculate about them, he undoubtedly began to form crude ideas of creation and evolution, and it was by the time he had learned to record his thoughts, so that posterity might read the concepts of evolution present in his mind. Not that these early concepts correspond in detail with modern ideas of evolution; they were far from it. They were highly speculative, frequently coloured with mythology, and represented at their best as what we may think of as ‘good guesses’. These are reflected in literary forms as legends of creation popular among the Sumerians, Egyptians, Greeks and Hebrews. But in them we see, though
dimly, the outlines of the idea that the living world is one, and that the living things change, giving rise to new forms.

The universe, inanimate as well as animate matter, human bodily frames as well as man’s Psyche, the structure of human societies and man’s ideas—all have had a history and all are in the process of change. Nature is never at rest. Change is ever present in the world, because change is the law of Nature, as is evident enough from one’s own view of society, custom, environment, races and animals species, earth surface, and star clusters. Heraclitus observed: “All things are in a state of flux.”\textsuperscript{11} The 17\textsuperscript{th} century evolution had an embryology origin, the unfolding of parts and organs for attaining a performed body plan. It was only in the 19\textsuperscript{th} century that people came to use ‘evolution’ to mean the transformation of species. The fact that human beings were treated as a product of biological evolution, raised the consciousness of contemporary philosophers. Their attention was focused on historical, logistical and ethical questions and especially on those

concerned with cultural and religious philosophy. After a final flowering of philosophy at the end of the nineteenth century and the beginning of the twentieth, when a number of well-based and comprehensive systems were worked out, there followed a phase of restriction. This was the Greatest Gift of ‘The Age of Enlightenment’. This opened up a new chance to the world, a process of achievement in which step by step higher values could be won. Many intellectual threads led to its modernisation. The philosophical work of Hegel planted the seed, which Plato could not do. Aristotle, his follower, “the greatest investigator of antiquity,”\(^\text{12}\) as said by Locy, suggested: “Not only were species immutable but there was a hierarchical order of species from most imperfect to most perfect, a concept refined over the centuries as the Great chain of Being.”\(^\text{13}\) This chain was questioned by Leibniz to propose that the universe was not perfect, but only on its path to perfection. Everything under the sun is in a larva-to-butterfly stage. None escapes the clutches of transformation either in the physical,


\(^{13}\) Thomas Mautner, *A Dictionary of Philosophy.* (USA: Blackwell Publishers INC, 1988) p. 17
mental or spiritual circle where he is captured. The creed of the evolutionist is also that life is a growth. Schrodinger, a Nobel Laureate in Physics, predicts that the present age known as the Age of Technology will in the near future be renamed as the Age of Evolution. But the changes taking place are in a systematic or continuous manner. So evolution is the comprehensive plan of sequence in all events. The phenomena of night and day, of the moon, of the year are characteristically short-range, dynamic and repetitive. Things spin and reel, but their order and result stay the same. The situation is dynamic indeed, but it is also dynamically fixed. Even the Copernicus overturn, Kepler’s laws, the theories of Galileo, Rene Descartes and Issac Newton did not alter this basic outlook.

There are three traditional views regarding the evolution of life. The foremost is that germs of life had come to the earth from some other planet travelling through space. The second is that life had come to the earth by the creative act of the Divine Will. The third traditional view was that life arose upon the earth by a natural process being slowly evolved from inorganic matter.
In this study it is sufficient to explain the second and third in detail. The doctrine of creation by God is common to the monotheistic religions of Judaism, Christianity and Islam. Christianity is a religion that is implicitly evolutionistic, in that it believes history to be meaningful: its current flows from the creation, through progressive revelation of God to Man, to Christ and from Christ to the kingdom of God. All creatures emerge from God and re-enter His being; our life is God’s life in us. Saint Augustine expressed this evolutionistic philosophy most clearly. But the Judaeo-Christian tradition took over from oriental religions the idea of the Garden of Eden and of the fall of the man as beginning of the world’s history. Interpreted literally rather than symbolically, this view is anti-evolutionistic. Moreover, almost two millennia of Christian exegesis do not make it clear that the history of man ought to be an evolutionary development, a collaboration of God and Man, rather than a series of fitful interventions by God. Even such forward-looking theologians and philosophers as Niebuhr and Green accept scientific evolutionism as something irresistible but not exactly welcome. Creation is by a single supreme God and is an absolute creation *ex nihilo*. It is a free
act on God’s part, done out of love and generosity. Thomas Aquinas did say, “To hold creatures cheap is to slight Divine power.”\textsuperscript{14} God not only created but has also sustained it; without God it would instantly collapse into nothingness. The sacrifice of Christ was the most atoning in the history of human civilization, it was the \textit{summum bonum} of evolution. The physical life should evolve to immortality aided by the Creator. This is the essence of the Christian Eucharist. The crown of human life is also this march to immortality. The Alabaster vase of the Sumerians implies that the material beginning of biological evolution of life is rooted in matter, and that it shoots up towards spiritual blossoming. Life stretches from Alpha to Omega, it links enormity to infinity. To experience it, one should descend to \textit{Alpha} at its base and ascend to Omega at its top. The opening of the inner eye is a mystical symbol that helps man to partake of the secrets of the divine life within. Christian Baptism and ritual perfection is another path to the Divine. Jesus said: “Most assuredly, I say to you, unless one is born of water and spirit he cannot enter the kingdom of God.”\textsuperscript{15}

\textsuperscript{14} ibid., p. 252

\textsuperscript{15} \textit{The Holy Bible}. (Madras: India Bible Literature, 1982) p. 69
Islamic religion, founded in 622 by Mohammed, is monotheistic in a much stricter sense than Christianity with its doctrine of the Holy Trinity. A similar development had apparently taken place half a millennium earlier in India. The concept arose there of the impersonal Brahman, the All-One, out of which everything takes form, and into which it returns again. The people, however, also personified this Brahman, and it became worshipped as the God Brahma. The early Chinese philosophers of the sixth to third centuries B.C., such as Tsang Hsi, Lao Tse, Lich Tse, Chuang Tse and others arrived at a similar concept of the ultimate unity, the ‘Tao’, the source of everything. But a growing understanding of the causal and logical relations of all events did not necessarily lead to a transmutation of religious ideas into philosophical ones. In India, religious and philosophical ideas have remained in closer contact. Religions still exist at the present in all parts of the world and they have a far greater influence on most men than philosophical ideas have. So, religion must have other roots besides ignorance about the processes of nature; these roots must be sought in man’s general mental character and requirements. Every religion has its popes and cardinals, its
idolarty and witch-hunts. The cards and games are the same; it is only the names that are different.

The third view is that there can be nothing more permanent than the celestial bodies. The ancients regarded them as perfect as well as permanent, because changes seemed incompatible with perfection. The Newtonian cosmos was, if not perfect, at least perfectly orderly, and perfect order need not contain provisions for changes. However, Kant and Laplace sketched a cosmogony according to which the solar system began as a gaseous cloud and gradually differentiated into the sun, planets and moons, which subsequently solidified and assumed their present shapes. The theory of uniformitarianism in geology and geography stems particularly from Lyell, who stated that mountains and plains and seas have acquired their present shapes very gradually as a result of causes which continue to operate and are easily observable. The work of Lyell appears to have been the major formative influence in Darwin’s scientific development, and Lyell’s support of Darwin’s theories has been a source of encouragement to the latter. The current century has extended evolution down to inert matter
itself. Under the new dispensation, not even atoms are eternal and unchanging; they, too, have histories and their histories and those of the near and distant universe are chapters of the same grand cosmic process.

Culture is the means whereby man adapts himself to his natural and social environment and to his pre-existent cultural milieu. The history of this adaptation is the story of cultural evolution. The progress of human societies seemed to be a law of nature. The most evolutionary scientific ideas of all time concerning the nature of man is that man has evolved and is evolving. Comte J. Huxley stressed this point: “Man’s most sacred duty ... is to promote the maximum fulfilment of the evolutionary process in this earth.”16 Evolutionism first developed as a secular and agnostic philosophy. Its starting point may perhaps be apprehended in the “Quarrel of the ancients and the moderns”17 which took place in France toward the end of the seventeenth


17 Theodosius Dobzhansky, Mankind Evolving. (New Haven: Yale University Press, 1964) p. 2
century. One side of this dispute held the achievements of the classic Greeks and Romans to be the apogee of history, while the other side believed that these achievements could be equalled and surpassed. The work of Newton provided a basis for the audacity of the ‘Modems’. Then Giovanni Battista Vico announced the new and startling view, which was almost self-evident now that human society and human history were the works of men, and products of gradual development. History repeats itself in cycles, but this idea is still much alive – it was espoused in the nineteenth century by Nietzsche and Danilevsky, dramatized by Spengler, and bolstered by the enormous erudition of Sorokin and Toynbee.

A schematic view of the order of evolution may be presented as follows: The Palaeolithic people were hunters and food gatherers. The Mesolithic people lived on hunting, fishing and food-gathering, and, at a later stage, domesticated animals. The Neolithic people used tools and implements of polished stone and pottery. The Chalaolithic age was the period of stone and copper. A Danish Archaeologist by name Christian Thomson coined the terms Stone Age, Bronze Age, and Iron Age to denote successive
stages in human prehistory. It was Marquis de Condorcet, a French social thinker, who explicitly stated the idea that man’s history was a directional development from lower to higher stage. The development was to have ten stages, from primitive savagery, through increasing enlightenment, to ultimate perfection. Echoes of Condorcet’s views are audible in Jefferson and perhaps in all the liberal thinkers who followed him.

The progress of human societies seemed to be a law of nature, inevitable, probably uninterrupted, which could at the most be delayed somewhat by the stubbornness of reactionaries or speeded up by the well-meaning help of liberals. Indeed, many people were prospering, at least in the parts of the world swayed by the industrial revolution. The point to be remembered was how soon general happiness could be reached. Those who reaped the improvements for themselves readily assumed that material comfort would eventually come to almost everybody or at least to those capable of wanting and appreciating them; all that was needed to ensure this admirable prospect was completely free private enterprise and unrestricted competition. Marx, with a rather
different view of the inevitability of progress, but an equally strong belief in it, recommended rather different methods. The evolution of human society had three main stages corresponding to successive advances in the mode of production – Pre-class society, class society and the classless society of the future.

Man’s effort to know himself are often frustrated by his propensity to deceive himself. The industrial revolution failed to benefit everybody equally. In cities of nineteenth century Europe and America, poverty and squalor persisted cheek by jowl with mounting comfort and luxury. This was nothing really new; disparities of wealth and social status have been increasingly a part of the social sum, ever since simple food-gathering, economics and low population densities gave way to more complex economic arrangements and growing populations. What was novel was the rapid carving up of the world into colonial empires. Most of mankind became ‘subject races’ to be uplifted and perhaps even civilized by their white masters.

Culture is acquired by imitation, training and learning. A modern form of unilineal evolutionism has been propounded by
White, Childe, Steward, Sahlins and their collaborators, who argue that evolutionary changes of culture are of two kinds – General and Specific. The General unilineal evolution involves the passage of cultures from lower levels of development to higher levels; the levels are characterised best of all by the efficiency with which the energy resources of the environment are exploited. Specific evolution consists in the adaptation of cultures to the diversity of local conditions.

Culture is an instrument of adaptation, which is vastly more efficient than the biological processes which led to its inception and advancement. Changed culture may be transmitted to anybody, regardless of biological parentage, or borrowed ready-made from other peoples. Culture is a part of the biology of man, even though it is passed on socially and not through genes. Culture is part of the evolution of man. Man is evolving continually as a species, perhaps more rapidly now, than any other species. Human evolution is not completed or discontinued. This is true of its biological and cultural aspects. Man is an out-and-out social animal, not a solitary one. The human environment is before all
else the society to which a person belongs, and a society is a complex of individuals bound by co-operative interactions that serve to maintain a common life. The nature of the community can be classified as new world native settlements, which fall into five major types: camps, semipermanent villages, permanent villages, towns-and-temples and cities. A camp site is small in extent and marked by thin and scattered refuse. Semipermanent villages are those which give evidence of substantial occupation over an appreciable span of time. Permanent village settlement is the locus of a community which has occupied the same spot steadily over a long period of time. The town-and-temple pattern of settlement and community type is an enlargement and elaboration of the permanent village pattern. The criteria for cities are the size of the area and the strength of the population. The beginning of the established cultivation pattern in Nuclear America was dated at about 1500 B.C. in middle America and at 1000 B.C. in Peru. According to Coon, culture is “the sum total of things that people

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19 ibid., p. 298
do as a result of having been so taught." No one’s cultured way of life is better than that of another. People live differently and that is all.

Human labour is a new form of social activity, and it gives rise to a new phenomenon, articulate speech, and to a new characteristic of the mind, the conscious reflection of objective reality. Language is connected with man’s productive activity and also with every other human activity. Work appeared to him as a main factor in the development of his higher and abstract thinking. Speech functions are created from work. The stock of words perform the task of representing a person’s entire wealth of thoughts and feelings in sensible sounds. Stalin declared: “In the history of mankind, a spoken language has been one of the forces which helped human beings to emerge from the animal world, unite into communities, develop their faculty of thinking, organise social production, wage a successful struggle against the forces of nature, and attain the stage of progress we have today.”

20 Thodosius Dobzhansky, Op.Cit., p. 59
Theories of the evolution of life came on the scene last, after those of cultural and cosmic evolution. Man's biological evolution changes his nature: cultural evolution changes his nurture. Organic evolution is used to denote the evolution of organism. Roughly, the time sequence is as follows:

- 550 - 450 million years ago - Seaweeds and Invertebrates
- 450 - 300 million years ago - Fishes
- 300 - 250 million years ago - Amphibians
- 250 - 50 million years ago - Reptiles and Birds
- 50 - 30 million years ago - Mammals
- 30 - 1 million years ago - Apes and Humanoids
- 1 million years ago - Emergence of Man

The direct ancestors of the Homo Sapiens were the Kanam Kanjera men of South Africa.

The first scientific investigation of evolution was conducted in the 1700's by two French Naturalists, Comte de Buffon and Baron Cuvier. The studies were experimented on

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fossils and comparative anatomy. In 1809, another French Naturalist, Jean Baptiste de Lamarck, formulated the first Comprehensive Theory of Evolution. Lamarck observed that an animal's body-parts could change during its life-time depending on the extent to which it used them. Such acquired traits constituted heredity. Then, Weisman proved the theory of heredity assuming continuity of germ plasm and non-transmission of acquired characteristics.

Charles Darwin supplied the keystone of the arch connecting our understanding of the destiny of the atom with that of the destiny of man. Darwin was exclusively interested in the fact of life. By the masterful presentation of evidence in the epoch-making book, *Origin of Species* (1859) he convinced the scientific world that all species evolved from a common ancestor by means of Natural Selection. Another British Naturalist, Alfred R. Wallace, proposed an identical theory about the same time. But Darwin presented more extensive evidence to support the findings and so Darwin's work became popular. The main factors operating

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23 The survival and propagation of organisms best adapted to their environment.
in the evolution of life, according to Darwin, are: Struggle for existence – self development and self-preservation is its goal; Variation – some individual organisms have the advantage over others; Heredity – The transmission of characters from an individual organism to its off-spring. Darwin identified these sources from the personal observation of the Galapagos Islands, the Geological Theory of Sir Charles Lyell stating that the earth was formed by natural processes, and the Population Theory of the British Economist, Thomas Malthus. From all these, Darwin concluded that there was no God. He wrote: “I cannot persuade myself that a beneficent and omnipotent God would have designedly created the ichneumonidae with the express intention of their feeding within living bodies of caterpillars, or that a cat should play with mice.”

Most evolutionary changes occur too slowly to be observed directly. Scientists support the theory by five principal sources:


Fossils – remains of traces of organisms studied by methods of radioactive dating and other methods; Adaptation in organisms – changes in environment may cause organisms to develop various adaptations; Geographic distribution of species – certain species of animals and plants can be seen in only certain areas; Comparative studies of fossils – studies conducted show that organisms share common structural and biochemical characteristics suggesting that they evolved from common ancestors; Embryology – the embryos of many species resemble one another in many phases of development.\textsuperscript{26} Evolution through Natural Selection causes a species to change, so that it can adapt itself to changes in its environment. This type of species development is called Speciation. The isolations that mark the beginning of speciation are Geographic isolation, Ecological isolation and Genetic isolation. Geographic isolation implies groups of organisms separated by physical barriers, Ecological isolation involves populations that live in the same area but occupy different habitats, and Genetic isolation results from mutations that affect sexual traits.\textsuperscript{27}

\textsuperscript{26} The World Book Encyclopedia. Op. Cit., p. 333

\textsuperscript{27} ibid., p. 332
The growth and transformation of organic forms from relatively simple beginnings through various stages of increasing complexity can be studied under two heads: ontogenetic evolution and phylogenetic evolution. Ontogenetic evolution is the evolution of the individual organism of any given species from its beginning in a simple cell to mature and complex forms; phylogenetic evolution is concerned with the story of the development of a species. Modern evolutionary theory explains a wide range of natural phenomena including the deep resemblances among organisms, the diversity of life forms, organisms’ possession of vestigial organs, and adaptedness between organisms and their environment. The mechanisms of Natural Selection, Mutation\textsuperscript{28} and Speciation are used in evolutionary theory to explain the relations and characteristics of all life forms. The difference has been due to genetic mutation or change of sequence in the DNA\textsuperscript{29} nucleotides. DNA is the chemical substance of which genes are made and is therefore found in chromosomes. It is the hereditary material of all cells. The way in which the atoms are arranged to

\textsuperscript{28} An abrupt change in the genetic characteristics of an organism

\textsuperscript{29} Deoxyribonucleic Acid
form as molecules of DNA was one of the most exciting discoveries of the twentieth century. James Watson and Francis Crick suggested that the molecule is like a twisted ladder, an arrangement which has become known as double helix. The latest science report is that the difference between the brains of humans and those of the simplest mammals has been due to the growth of the Neocortex. It grows up to 16% in insect-eaters and 80% in humans. This neocortex is responsible for social interactions, reasoning and other complex cognitive tasks.

The evolutionary theory is supported by an usually wide range of scientific evidence, gaining its support from science fields as diverse as Geology, Embryology, Molecular Genetics, Paleontology, Climatology and Functional Morphology. Biochemistry also supports the evolution theory. Ideas from the evolutionary theory impinge on the social science in two ways: first, there is the research programme of Social Biology, which

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31 The dorsal part of the cerebral cortex

32 *The Hindu*. “Evolution”, 14th June 2001, p. 16
attempts to demonstrate the impact of Biological evolution on important features of the human mind and culture; second, there is the idea that Biological evolution provides a suggestive analogy for the process that drives cultural changes. The evolutionary theory impinges on the study of Ethics in two ways: first, evolutionary ideas may help account for why people have the ethical thoughts and feelings they do; second, evolutionary ideas may help to illuminate which normative ethical claims are true or correct.

In short the types of evolution are the following.

- Cosmic evolution - the description of the evolution of the world, sun, moon, planets, stars, etc.
- Terrestrial evolution - the different changes which gradually occurred in planets.
- Geological evolution - the different Geological changes.
- Biological evolution - the gradual advent of different species of living beings and also of the extinction of several species.
- Human evolution - the type of evolution which explains changes in human civilisation, culture, literature, art, religion etc.

It is true that biology is the kernel of evolution, and philosophers of evolution are no doubt under the influence of biology and psychology. But it is very different from the problem
of growth in the world of living creatures. The general question which the philosophers find confronting them as a result of the detailed studies of the sciences: may be made more specific by division in to two questions. Are all different types of evolution causally bound up with each other? Or are they separate and distinct stories? Can the evolution of life be accounted for wholly in terms of mechanical causation? Or must the process in some sense be deemed teleological? The thesis of pluralism states that the world is full of partial stories which run parallel to one another, beginning and ending at odd times. They mutually interlace and interfere at certain points, but they cannot be unified completely. The thesis of monism is that the whole physical environment is a gigantic process of evolution which reaches back into the unimaginable past and always goes forward in accordance with inviolable laws. There is no evolution for an individual; it is only for the entire universe. For that, it calls upon one another to play. The next is the evolution of life, mechanism versus vitalism. Mechanism emphasises mechanical causation, holds that the living organism is only a physical-chemical machine, and that its behaviour can be resolved by analysis into physico-chemical
processes. There is no fundamental difference between organic and inorganic matters; the chief difference between them is that of complexity, the organic forms being much more complex in their structure than the inorganic. The arguments which the mechanist advances in support of this thesis are: Life is not mysterious, it is something more than ordinary processes of change and activity that take place in the living organism. Movements of organism are in response to stimuli and the development of muscles and organs within the organism. The method of science is essentially mechanistic – explanation in terms of mechanical causation is its goal. Vitalism insists that teleological causation is true. The vitalist urges that organic forms are radically different in kind from inorganic forms, that there is in the organism something new which is not found in inorganic or non-living matters. The major arguments of the vitalist are: The organism behaves in a way in which non-living objects do not; its behaviour is an adjustment, that is, an attempt to right itself with the environment, so that its well-being is taken care of. The organism is indeterminate in its behaviour, whereas the behaviour of inorganic matter is fairly predictable. Some vital process can be explained only
teleologically. It is inconceivable how life can be explained in purely mechanistic terms.

There is a long line of philosophers involved in the theory of evolution. The Stoic world-view is cyclical, world’s originating and ending in the element of fire which is also universal reason. Zeno said that the universe evolves through cycles, each culminating in a universal conflagration ending one cycle and beginning the next; no souls are immortal beyond this point. Among the pre-Socratic philosophers, the framework of thought was almost always implicitly evolutionistic and often explicitly so; one thinks especially of Anaximander who surmised that man arose from fish like ancestors. Heraclitus believed that every thing is in a constant process of flux. Empidocles thought that individual organisms arose from pre-existing parts, such as heads, arms and legs, which were brought together by chance, through stages of development and principle of adaptation. Democritus dealt with the mechanical atomic process underlying the increasing complexity of development. The Epicureans followed Democritus, adding to the scheme only a power to swerve on the part of individual atoms.
Epicurus states that there is infinite space and the atoms move constantly in it; they originally fell in straight lines, at the same rate of speed, but some swerved by chance and as a consequence, there were collisions and a redistribution of the atoms. Out of this came the evolution of the universe, the plants, animals and man. Epicurus’ ‘Empirical Theory’ of knowledge led to the conclusion that Gods must exist, for men have ideas of them and all ideas originate in sense perception; but both are independent of each other for their existence. The system of Plato would seem to be antithetical to the idea of evolution, yet Plato sometimes refers to great cycles of time involving the death and rebirth at least of cultures, apparently viewing the process as devolving, not evolving, in its current stage. Aristotle, although believing in the fixity of species, contributed the idea of potentiality to philosophy and it is by means of potentiality that the idea of development is formulated. Aristotle’s belief in the fixity of species limits the application of the idea of development to the individual within the species within these limits; the analysis is subtle and satisfying. For the Neoplatonists, evolution, strictly speaking, is devolution, since the path of becoming is downward from the divine perfection.
Bruno, on the basis of modern science and Greek learning, offered a view of multiversities, all in process of becoming under the province of God. Leibniz presented a system of thought with great dynamism in the monadic constituents of all things, yet the development of the whole proceeded not by its own dynamism, but by God’s choice of a world pattern. He presented a scale of existence which is vertical rather than horizontal, analytical rather than temporal. Vico concentrated on the development of man in society, holding it to be both progressive and cyclical, proceeding from poetical wisdom to the forms it assumes in developed societies. Monboddo said that man is of the same species as the Orangutan, but man has gradually advanced from the animal condition, in which mind is immersed in matter, to a level on which mind acts independently of the body and to a social state determined by the needs of human life. In addition, Monboddo noted that language is a product of social living. The French philosophers wishing to derive the world from naturalistic principles, elaborated evolutionary doctrines implicitly or explicitly employing the scale of increasing complexity as an explanatory device. Holbach’s work also included man and development in the
scheme. Herder applied the genetic method to culture. Viewing lower stages as a condition of higher, and earlier as conditions of latter stages, he suggested that survival depends upon adaptation. Hegel reasoned that the all-inclusive ground of the universe differentiates itself into many different, even opposing, forms, creating a complex diversity in unity. In the course of evolution these opposites become reconciled and united in the whole. Later stages of development are the realisation, the truth and purpose, of the earlier stages, in which the latter are taken up. Beginning with simple, abstract concepts, it must move to more complex and concrete ‘notions’. The true is the whole, a totality which is never reached finally, but which keeps driving thought on in an endless process. Schelling maintained that things contain a polarity, which causes them to swing from the unconscious pole to the conscious; this is the creative impulse working out its mastery of resistant material in all possible ways. Comte, like Herder, concentrated on cultural evolution; Comte advanced his law of the three stages, holding that cultural evolution has its end in scientific enquiry. Lewes was influenced by Spencer’s evolutionary ideas.
Herbert Spencer believed that the new Darwinian hypothesis could become the nucleus of a genuine philosophical theory. The law of evolution would be the first to incorporate scientific data and inductive procedures. The states of being both mental and physical are characterised by the evolutionary principle. From the simple to the complex, the law of the nature is the same. Spencer denies teleology saying that there is no final goal to strive for. There are beginnings, middles and ends, but all these processes take place in a finite space and a finite time. All around us are in the working law of evolution and dissolution, but cannot say whether the universe as whole is in this visual circle. In such a situation the domain of the unknowable arises and therefore cannot be answered. That evolution applies to phenomena only in relative sense is expressed in Spencer’s famous formula of evolution. “Evolution is an integration of matter and concomitant dissipation of notion; during which the matter passes from a relatively indefinite, incoherent, homogeneity to a relatively definite, coherent heterogeneity; and during which the retained notion
undergoes a parallel transformation." With this in view, Spencer includes the progression of societies in the direction of dynamical equilibrium of individuals, the human condition is perfectible because human faculties are completely adapted to life in society, implying that evil and immortality will eventually disappear. Spencer does not accept Lamarck’s theory. According to Spencer, “Intelligence has neither distinct grades nor is it constituted by faculties that are truly independent, but its highest manifestations are the effects of a complication that has risen by insensible steps out of the simplest element.” This helps man to see the future and past. Spencer’s famous definition is “Life is the continuous adjustment of internal relations to external relations.” Radhakrishnan describes Herbert Spencer as “the most influential advocate of evolution. His doctrines were meant to be his own spider-spun. Spencer’s philosophical position may be approached through his theory of knowledge. He related philosophy to science and to religion. Science is partially-unified knowledge, philosophy


34 ibid., p. 326

35 ibid., p. 322
is completely-unified knowledge, but unlike to them, religion deals with the unknowable."

Huxley was an immediate proponent of the view of evolution held by Darwin. Roberto Ardigo’s conception of evolution was based upon enquiry into his own intellectual development. Ardigo applied his theory to the interpretation of the evolution of the solar system, in which smaller bodies develop within the larger. He concluded that an infinite continuum pervades all. He thought highly of Kant’s theory of the synthetic unity of experience. Chauncey Wright says that the process of the universe is cyclic, not endlessly evolutionary. The evolution of self-consciousness was accomplished by putting old capacities to new uses. Sir Leslie Stephen states that survival in the evolutionary process is more ultimate than pleasure, though men do not consciously realise this fact. Sumner laid the basis for social Darwinism by applying the doctrine of the survival of the fit to economic matters. Haeckal applied Darwinian evolution to

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metaphysics, building a monistic and pantheistic naturalism. Kropotkin held mutual aid to be as significant a factor as Darwin’s competition in the explanation of survival. Caird, who had sympathy with Spencer’s evolutionary philosophy, made it acceptable by Hegelianising it. Harris was a follower of Hegel. American pragmatists have always oriented themselves very closely to the Darwinian revolution. Dewey, for example, takes this as the most decisive watershed of intellectual thought. Charles Pierce applied the principle of evolution still more broadly, holding that the laws of the universe themselves are in a process of development through vast period of time. John Fiske followed Spencer developing of an evolutionary theism.

Fredrich Nietzsche interpreted life in terms of evolution entering in the biological urge towards survival and taking the form of a ‘will to power’. This is the essence of life and the criterion of value. Nietzsche gives an evolutionary twist, and portrays the heroic and aristocratic individuals as the protagonist of a new mutation of the human species, bringing into existence ‘the Superman’ (Übermenschen). A moral hero enthrones in order to
establish a new species and to fulfil the design of a cosmic evolution. Those who dare to be wilful seem to constitute a heroic aristocracy which makes others slaves. The ‘will’ of man is the dynamo of creative evolution, productive of new and higher forms of existence. Morality must evolve and break through, and progressively widen the formulated codes of the past. This leap is a mutation of human species from an old to a new specific form. The process of evolution repeats itself in endless recurrent cycles. The will void of scruple and intelligence must crave for its destiny.

C. L. Lloyd Morgan’s psychological studies had a Darwinian background. Evolution is a continuous process and Morgan tried to trace it. The focal point of investigation was the behaviour of those organisms which showed some capacities to learn from intelligence; for the purpose, he introduced the ‘method of trial and error’. The concept was neither mechanistic nor finalistic. He rejected that biological processes can be understood by physico-chemical terms and physiology can give adequate account of animal behaviours. He rejected also that teleology is operative throughout the living world. World has not only changed
but changed with critical turning points; these turning points are marked as ‘emergent’, a term coined by Lewes. An emergent supervenes upon what already exists; it is something genuinely new in the history of universe. Thus Morgan represents evolution by a ‘pyramidal scheme’. Neither science nor philosophy can explain it but a metaphysical system can. Four basic concepts are necessary for its unfolding: stuff, substance, quality and property, and the ultimate stuff consists of psycho-physical events. Each system has intrinsic qualities grounded in its substance and extrinsic properties grounded in its relation to other systems. There is the universal co-relation of the physical and psychical events, a similarity between Spinoza and Morgan. The whole course of events subsumed under evolution is the expression of God’s purpose.

Henri Bergson, the chief exponent of creative evolution, was interested in the basic facts of the universe, and recorded the path the world movement takes. There is no fixed beginning or fixed ending. He accepted the historical reality of evolution but rejected attempts to explain it in mechanistic or materialistic terms.
He advanced a theory that owed much to the tradition of European and French vitalism, and to Plotinus. Guyau chanted in verse and in highly imaginative prose the cosmic epic of evolution. To him, evolution is a combination of matter and motion. Bergson introduces the doctrine of 'the vital impetus' which, is speculative. The impetus is declared to be a current of consciousness, that has penetrated matter and given rise to living bodies, and also determines the course of their evolution. The vital impetus is 'supra-consciousness’ to which the name ‘God’ can be attached. God is neither omnipotent nor omniscient, but is ceaselessly changing. The discovery of purpose and of the reality of God cannot be made by the intellect; it can be made only by the sort of intuition that is the mystical experience. The evolution of the human species gave rise to the capacity for conceptual or rational thought. The technological triumphs of modern man provide the clue to the proper understanding of intellectual powers. Growth and evolution must be understood as new arrangements of old parts. Along side the capacity for conceptual thought, there exists in man a capacity called 'intuition'. Both capacities are the result of

37 Neo-Platonist philosopher
evolution; the second is derived form ‘instinct’. The ‘spirit’ of the mystics must become universal in order to ensure man’s future evolution. Matter is dominate, but life overcomes it; life enters into matter and diverts it. Matter is immobility but nature is intellect. Other than intellect is the factor of instinct. Instinct speaks organically whereas intellect speaks mechanically. Bergson probes into consciousness with the object of getting at the secret of all life, for the psychic continuum which is consciousness, is but a replica of the great design by which élan vital operates to throw up ever-increasing and divergent forms of life. And in the psychic continuum, which is self-existence, Bergson finds change without ceasing. The ego endures, that is, is in constant flux, and time is the stuff of which it is made. The vital impetus is the cause of variations that accumulate and produce new species, and carries life towards higher complexity of organisation. The impetus does not create energy. No predetermined plan or purpose is involved. The vital impetus is not finalistic; it does engender progress. A perfecting of functions has occurred through successive stages. Man must understand the purpose of the creation not intellectually but through intuition. Bergson tried to make the contention
acceptable by means of analogies. The creative impulse shoots forward like a rocket from which the dying embers fall back dead and two capacities together in institution – a discipline of immediate knowledge that has the power of instinct and intelligence – united. Matter and spirit are co-existent and interdependent.

The philosopher who would explain life movement which is evolution should get into the inwardness of life, should be one with it, discarding the outer crust. He draws facts is support of his position from modern biology and psychology. Bergson adopts many directions of the evolutionary process. In some points he agrees with finalism, like élan vital forces which create divergent paths for the development of the living organisms. The Bergsonian theory is the only philosophical theory which takes us nearest to the heart of the mystery of evolution. Evolution is truly creative like the work of a great artist, but until the want is satisfied we cannot know its nature. Instinct is nearer to nature than intelligence. "Duration is the continuous progress of the past which grows into future and which swells as it advances. For a conscious
being, to exist is to change, to change is to mature, to mature is to go on creating oneself endlessly.”

Samuel Alexander gave birth to the Emergent Theory of evolution. As a disciple of Aristotle and Bergson, Alexander tried to graph the goings-on of the world. Alexander’s naturalism emphasize both continuity of nature and its periodic emergence of new levels. The higher levels are real additions, not mere duplications. When life appears in the process something new is added from the lower stages of being with life, and then the mind emerges. With the appearance of mind a new product is formed. An urge or nisus is needed to move a more complex form of reality but not God. Samuel Alexander resisted the materialistic reduction of mind to matter. Likewise, he opposed any dualism of life and matter or mind and matter. Life and mind are manifestations of nature, continuous with the lower material forms of existence but not merely reducible to them. The range of evolution is cosmological vision which extends beyond mind. A race of being

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higher than human minds are angels or archangels. Divinity is the ultimate reach. The highest emergent quality is Deity. Deity does not exist, but it is next to the mind to be realized in evolution. Space-time is the stuff, the matrix out of which the universe has evolved. They are inseparable, pure, undifferentiated, or in absolute motion. Alexander was influenced by the recent developments of science but emphasized the metaphysics of space-time. He tried to present a picture of continuous evolution of the universe with no loopholes or jumps. Life is an emergent of matter yet continuous with it. The space-time matrix get articulated and differentiated into qualities and categories. Qualities and empirical characters and categories are the essential and universal constituents of everything. The categories are the scaffolding of the world, and qualities give colour and shape, tone and timber. By their grouping and arrangements, new qualities and new stages of being shoot up. The last and highest being to emerge out of the space-time matrix is God. God is like matter and mind, not the creator of the world. God is not a finished being but an eternal becoming. Space is static, whereas time is dynamic and is the prime mover. He gives
emphasis to movement and calls it “pure movement”\textsuperscript{39} This pure movement is the ultimate stuff of the universe. Alexander summed up by saying “Time is the mind of space.”\textsuperscript{40}

A.N. Whitehead may be taken as an example of the recent philosopher whose metaphysics had assimilated the Darwinian view presenting biological change in a context, also compatible with the insight of modern physics. Types of experiences are intuitive and immediate. Matter behaves teleologically in a living organism and rationally in a human body; a miracle takes place in matter in every leap. A new conception of matter is a great desideratum of modern thought. Whitehead mentions four great novel ideas introduced into theoretical science in the 19\textsuperscript{th} century, which lead to the transition from the Newtonian cosmology to the new philosophy of organism. It is interesting to compare with ‘the three major scientific discoveries’ which, according to Engels, formed the background of Marxist philosophy. The first three are

\textsuperscript{39} ibid., p. 364

identical for both. Whitehead's list is:-

Conservation and transformation of energy.
Atomicity and its application to biology.
Darwinian theory of evolution.
Fields of force and activity pervading all space.

The first of these diverted scientific thought from mass to energy as the fundamental concept in physics — thus leading to the dissolution of the billiard ball theory of matter. The second argument was that — not only the living cells but inorganic atoms too, as they were conceived later by the Rutherford Bohr theory, turned out to be highly organized centre of ceaseless activity-organisms at different levels.

Darwinian theory of evolution suggested the philosophical generalisation that even between such extremes of natural phenomena as a block of stone and a man of genius, a continuous gradation of organization was conceived so that their diversity, immense as it appeared, cannot be ultimate or irreducible.

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The electrons orbit the nucleus of an atom at set or energy level, changing level only when a quantum of energy is lost or gained and emitting or absorbing radiation in the process.
The fourth great discovery, which Marx and Engels missed, became the keystone of Whitehead’s conception of the world as a unity of internally related events. This idea of an infinite field of activity first made its way into physics through Fresnel’s wave theory of light, but it did not really come to its own until the formulation of Maxwell’s electromagnetic vector\(^42\) equations - about the eighties of the last century.\(^43\) Whitehead speaks of experiencing cause. Whitehead’s treatment of the problem of induction suggests the principle of induction. This is compared with the Naiyāyka theory of inductive knowledge and Nyāya discerning universals by means of perception. Misapprehension is another version of Hegel’s philosophy of the absolute philosophy is all above a philosophy of process and growth in time; it is empirical. Whitehead speaks of three kinds of objects: sense objects, perceptual objects and scientific objects. Under the influence of Newtonian and Cartesian theory, he denies the bifurcation of nature; experience, appearances and reality are true.

**Appearance** is defined as “the effect of the activity of the mental

\(^42\) The vaccum or material medium could transmit waves which are both electric and magnetic in nature.

pole, whereby the qualities and co-ordinations of the given physical world undergo transformation." Leonard Hobhouse applied Spencer’s evolutionism in the development and purpose of the evolution of mind and morals. Benedeto Croce was a follower of Hegelian dialectics. According to John Elof Boodin, the creative pattern in the universe is to be realized in its real entire extent. Smuts held that evolution occurred through a series of creative leaps from the physical to the mental. Teilhard de Chardin proposed a theory of evolution proceeding from the inorganic through the organic into the sphere of mental evolution, which is called the noososphere. He introduced the truth of evolution into modern theology. R. W. Sellar held a doctrine of evolutionary naturalism. Emile Durkheim took Spencer’s approach and divested it of its apriori form and ideological entanglements.

The speculations on evolution in India are almost as old as the Vedas. Mostly all schools of Indian philosophy accept the doctrine in one form or another, whereas Sāṁkhya, Viśiṣṭādvaita and Aurobindo’s integral philosophy give a detailed account.  

44 ibid., p. 374
According to Hindu philosophical belief, man’s nature, like that of every animal and plant, is the Ātman which has its origin in the Brahman, the All-One, into which it will enter again after death. So, everyone must constantly bear in mind that each living organism is part of the same eternal and Divine Brahma (tat tvam asi), to which no violence must be done. The Kaṭha Upaniṣhad contains the following passage, “As the same non-dual fire, after it has entered the world, becomes different according to whatever it burns, so also the same non-dual Ātman, dwelling in all beings, becomes different according to whatever it enters. And it exists also without.” According to the Sāṁkhya, the universe evolves. This evolution takes place because of the contact between prakṛiti and the puruṣa. The puruṣa individually cannot create because he is inactive, and in the same manner prakṛiti cannot create unassisted because it is material. The contact of these two is necessary for creation to take place. The evolution of creation can take place through the activity of prakṛiti only when the energy of prakṛiti is conjoined to the consciousness of the puruṣa. Inactive purusa and unconscious prakṛiti cooperate in order to achieve the

objective. This contact creates disturbance in the stability of the gunas and evolution starts. Puruṣa is needed to see, know and utilize prakṛiti and the puruṣa stands in the need of prakṛiti in order to experience, or to attain substances by distinguishing between puruṣa and prakṛiti. The constituents of the guṇas exist in a state of equilibrium even before creation. This state of equilibrium is disturbed when there is nearness of prakṛiti and puruṣa. This is known as the state of guṇaṅkṣobha. The first to change is the rajas, because it is active and dynamic by nature. Because of rajas the other guṇas sattva and tamas are also activated. One constituent element tries to gain control over the others. The three elements are constantly mixing and separating. This leads to the creation of many kinds of objects and beings, differing from each other because of the difference in the proposition of these three constituent elements which are to some extent found in every one of them. Mahat or buddhitattva is the first distortion in evolution. Mahat is the cosmic aspect of intellect, and intellect in the individual is the psychological aspect of mahat. Mahat is both eternal and non-eternal. Ahamkāra or the ego is the second production of evolution. Buddhi is an intellectual concept,
while *ahaṁkāra* is practical. Distinctions of *ahaṁkāra* as *Sāttvika, Tamasa* and *Rājasa*, are according to the element present in them. Then comes *manas*, the co-operation of the which is necessary for both activity and knowledge. The five sensory organs (*Jñānendriyās*) are skin, nose, eyes, ears and tongue. The senses are not perceived; they are inferred from the functions that they perform. Five organs of action (*karmendriyās*) reside in the parts of the body such as mouth, hands, feet, anus and the sex organs. They perform the following functions respectively – speech, handling, locomotion, excretion and reproduction. The five subtle elements (*tanmātras*) are touch, speech, colour, taste and smell. The *tanmatras* are very subtle and cannot be perceived; they can be known only by inference. The five physical elements (*mahābhūtās*) are earth, water, fire, air and ether. The evolution of *Sāṁkhya* is not the mere combination of atoms. It is a teleological evolution.

The cosmology of *Viśiṣṭādvaita* is based on teleological and spiritual aspects of uniformity and moral progression. *Brahman* is the ground of the cosmic order as its creator, sustainer and destroyer in terms of immanence and transcendence. Creation
is not out of nothing, but is only the transformation of the potential into the actual (sat-kārya-vāda). By knowing Brahman everything is known. The real (sat) without a second wills to be the many and becomes the world of name and form (nāma-rūpa) by its own inner creative urge. God before creation is without any difference of name and form, and the same, after creation, differentiates itself into the infinity of the space-time world and individuals, and becomes their inner self. In short, matter, souls and God constitute the reality in their inseparable relation to one another. So the world is real. It is not an unreal appearance (prapança). Both cause and effect are real. The effect is not an unreal appearance (vivarta) of the cause. It is a transformation (pariṇāma) of it. The cosmos is a physical and moral order and is sustained by the will of the Lord. When vice predominates over virtue, Īśvara destroys the world and thus prevents evil. The power of doing evil by jīva are withdrawn for a while by the redemptive will of Īśvara, and punishment (daṇḍana) is ultimately the effect of mercy (daya). But the self is morally free to strive towards perfection for itself. God has the inner purpose of adapting the process of nature to the spiritual progress of the individual and molding him into his own nature
The evolutionary process of nature here is of the *Samkhya* pattern which is perfected by the addition of the Twenty-sixth category of the supreme self or God (*puruṣottama*) who enters into the heart of creation *sarīrin* or over-soul. Evolution of nature is an occasion for the moral progress of self (*puruṣa*) and his attaining godliness. Evolution is followed by involution and the process goes own in a uniform rhythmic manner. Ultimately, creation is the re-creation or sportive spontaneity of the Lord. The manifold world is apprehended by perception and inference.

In contemporary Indian thought, evolution forms a significant part. Theories biological evolution and the doctrine of emergent evolution of the West had an impact on Indian minds. Swami Vivekananda has also contributed to the theory. His influence combines the biological evolution of Darwin, Huxley and Tyndall and also the idea of transmigration of souls from ancient India. The human soul has sojourned in lower and higher forms, migrating from one to another, according to *sāṃskāras* or impressions. On the scale of evolution, Vivekananda puts man nearest in approach to *Brahman*. The secret of evolution as the
manifestation of perfection is already there in human beings. In man there is the potential God, but he is kept in locks and bars of ignorance. When knowledge breaks these bars, God becomes manifest. Radhakrishnan also gives approval to this thought. The *Upaniṣadic* evolution, *Sāṁkhya* evolution and emergent evolution all find expression in Radhakrishnan’s outlook. He accepts the cosmic process of evolution. He places man at the highest level of intelligence, which presupposes matter, life and mind. The intelligent man will grow into a higher and divine life. Progressive self-enlargement is the impulse of nature. Evolution is a process of becoming and this ends up in being. While talking of saints, he compares them with the superman or deity. They represent the growing point of evolution like the omega point of Teilhard de Chardin. Aurobindo’s evolution is spiritual evolution, not merely a physical evolution. God in nature must make himself manifest through the evolution of man to the next stage. If there is an involution there must also be an evolution; the Divine must come out at one stage. The mind in living matters must evolve into the Supermind and the Supermind is the evolutionary future of mankind.
The above study shows that evolution can be analysed from the scientific, religious and philosophical point of view. Scientific evolution is one which mainly gives importance to evolution to matter. Darwin's theory of evolution is an example. From the religious point of view, God is the creator, sustainer and destroyer of this universe, as taught by Hinduism, Christianity, Islam, etc. philosophical aspects of evolution, according to western thinkers like Herbert Spencer, Nietzsche, Lyod Morgan, Henri Bergson, Samuel Alexander combined materialistic evolution with metaphysical aspects. In the East, the Vedas, Samkhya, Viśiṣṭadvaita and some contemporary thinkers give importance to the material and spiritual aspects of evolution. The evolutionary theory of Aurobindo and Teilhard de Chardin will be discussed in the forth coming chapters.