

Evolution, Agriculture and the Jain Philosophy

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When Darwin put forward his theory of evolution in the middle of the 19th century, people all over the world reacted with a feeling of disbelief. They found it difficult to accept the proposition that man had evolved from other animals. Darwin's theory, however, is so well established now that few will question its general validity. What is perhaps more important, our common ancestry with the animals is no longer considered so derogatory. A false sense of pride has been replaced by a better understanding of our origin and of our relationship with other species of animals including the nature of our differences and similarities.

Man and the other species of animals do have a great deal in common in their physiological processes such as the key process of respiration. In spite of these basic physiological and anatomical similarities, we now understand more clearly than ever before that in some ways the human species is unique. The faculty of thinking, which makes it possible for us to conceive ideas and concepts including abstract thoughts, and to communicate them in time and in space, is characteristically a human trait not found in other species. It is this characteristic of the human species which makes us unique and it is this faculty which had led to the development of a trend of thought and action which is very different from anything observed in the course of evolution of millions of other species preceding man. And it is in this context that the Jain philosophy finds a particularly important place and conveys a particularly significant message for the survival and future evolution of man.

Evolution of Man and Human Thought

Man as a distinct species first appeared on earth nearly half a million years ago in the form of *Homo sapiens neanderthalensis*. The modern man, however, has relatively recent history going back only to 40,000 years when *Homo sapiens* first began to appear. It is the cultural development of this latter species which is of the greatest interest to us today, specially when we consider the entire evolutionary period of more than 3 billion years. The greatest point of interest is that modern man has developed concepts which are in sharp contrast to the behavior of millions of other species of animals that preceded him. The basic Darwinian theory is based on struggle for existence and survival of the fittest. Although, the theory is often misunderstood, and it is not true that the world of animals is always full of strife, it is true that violent behavior is a common feature among animals and even in our immediate ancestors. The Neanderthal man was basically a hunter and gatherer of food. Also, modern man himself gave up hunting for food only about 10,000 years ago when he first started the process of domestication of plants and animals, which gave rise to agriculture.

It is important to recognise that most of the progress in human thought is a consequence of agriculture.

Once man had an assured source of food supply and was no longer forced to live a nomadic existence moving from one territory to another in search of food, and often fighting for it with the other tribes, he had time to sit back and think of more creative things. It is during this period following the birth of agriculture that some of the greatest men in the entire human history came out with ideas, which have had such a revolutionary impact on our behaviour and way of life and whose validity has not diminished with time. The Jain philosophers laid special stress on non-violence and renunciation of desire. Both these concepts are of the greatest significance to the human species as it prepares itself to enter the new century, following some of the most remarkable developments in science and technology.

Population and Human Nutrition

Paradoxically the very discovery of agriculture is now creating a serious problem in meeting the food needs of mankind. The problem basically arises from man's cultural and social evolution in the last hundred years. Our present day food need which have placed such a great strain on agricultural production are a function of two major factors. First, the developing countries continue to maintain a very high birth rate even though this is no longer relevant to our species in the context of development of the last 50 years in the field of medicine and public health. Evolution favoured a high birth rate at a time when the young offspring of most animals including man were vulnerable to death from disease epidemics. The discovery of life saving drugs in recent years has drastically cut down the death rate and it is clear that man is no longer required to maintain a high birth rate for the survival of his species. While the western countries have accepted this message, the eastern societies by and large have ignored it with the result that human populations in their countries have expanded greatly in the last 30 years and will reach explosive proportions towards the end of the century. As if this was not enough to create a serious food problem, the western countries have increasingly adopted during the last 50 years the plant-animal-human food chain. There is little evidence to show that this is the best way to meet our dietary protein needs. There has been a great deal of discussion on the biological value of proteins from animal and plant sources. It is true that experiments have shown that proteins from plant sources are often efficient in one or more essential amino acids and, therefore, their contribution to body growth tends to be limited. However, when proteins from several different plant sources are combined, the deficiency of one is made up by the presence of some of the essential amino acids in another. The earlier view that some quantity of animal protein is necessary in the human diet is no longer considered scientifically valid. It has been fully established that mixed proteins of vegetable origin such as those from cereals and pulses are of high biological value and do not have to be supplemented with proteins of animal origin. Thus, the pulses are rich in lysine, while the cereal grains contain adequate amounts of methionine.

Significance of Vegetarian Diet

It is here that we find the Jain message of non-violence and vegetarian diet of very great practical value for a world which faces serious problems of food shortages for an expected population of 6 billion people by the end of the century. It has been estimated that India alone will require an additional quantity of nearly 100 million tonnes of foodgrains in the year 2000 A.D. The requirement of cereals for the world as a whole by this period, according to an estimate made by the OECD, would be 2307 million metric tonnes. While agricultural scientists are responding to this challenge by increasing crop yields, it is clear that a shift from the non-vegetarian diet can go a long way in meeting the future food need of man. This follows from the fact that while the consumption of food grains in most developing countries is less than 200 kg. per person in a year, the corresponding quantity in many of the western countries is nearly one tonne. A large part of this quantity is fed to animals for the production of meat and since animals are not good converters of food grains the efficiency of the non-vegetarian food chain is low. It has been suggested by many western scientists that the world food supplies in the years to come could be greatly increased by eliminating the consumption

of meal so that cereal grains can be saved for direct human consumption. It has been estimated that it takes about 8 kg. of vegetable proteins to produce 1 kg. of protein of animal origin. We have already seen that the vegetable proteins when mixed in the right proportion can help to meet all of our requirements of essential amino acids.

The wasteful implications of the non-vegetarian food chains can also be seen from the fact the 29% of the world population today is using 54% of the food resources of the world. It is not as if people in the western countries have a vastly greater calories intake. However, if we convert their calories intake into grain equivalent calories, the difference becomes very large. Thus, while the per capita per day consumption of grain equivalent calories in India is about 2580, the corresponding value in USA is 11040 and in USSR 7170. It has been estimated that if we were to consume directly the vegetable products required to produce calories of animal origin, then a total of 5,000 calories per day person would be available for the present human population of the world. This is double the amount which we need for meeting our present food needs.

It is clear from the above analysis that the concept of vegetarianism is not a fad or a narrow minded religious belief, it makes sense scientifically and also in the context of our socio-economic development.

India's Strategies for Increased Agricultural Production

India, faced with the task of feeding a population of nearly one billion people by the end of the century has planned one of the world's largest programmes of agricultural development. It was in the 1960's that the Government of India took the crucial decision to launch the high yielding varieties programme recognizing the role of improved seeds, chemical fertilization, irrigation, pesticides and other farm inputs for a more modern kind of agriculture. The reorganization and intensification of agricultural research which followed led to a number of important decisions. Basically, as a result of these decisions, India with its 22 Agricultural Universities and 40 Central Institutes has one of the world's largest network of experimental stations in agriculture. Also, the country in the last 20 years has become the fourth largest producer and consumer of fertilizer nitrogen in the world. A great deal of new irrigation potential has been created so that India today has the world's second largest irrigated area. It is these major efforts which have made it possible for India to achieve near self-sufficiency in meeting our food need at the current levels of consumption. The country today produces nearly 50 million tonnes of more food grains than the quantity produced 15 years ago. India's production technology in crops like wheat and sorghum is now recognized to be one of the finest in the world. However, the Indian Government is very conscious of the fact that this is no time for complacency as the population pressure would continue to increase. The new technology which is now being generated and the enthusiasm with which farmers have responded to it hold considerable promise for continued self-sufficiency in the years to come. This would be possible only because India, unlike most other countries, would continue to have a greater proportion of foods of vegetable origin in the diet of most of its people. The emphasis to day is on production of food grains including pulses and oilseeds and dairy products like milk and butter. While increased animal production in India has been receiving attention, it is clear that the country will have to depend primarily on food grains for meeting its nutritional needs for many years to come.

Jain Philosophy and Diminishing Resources

Another basic concept of the Jains which is highly relevant to contemporary problems and which addresses itself to one of the most important issues relating to man's continued survival may now be briefly considered. The Jain philosophy has always laid a great deal of stress on curbing one's desires and having few worldly possessions. The Jain monks have been expected to set an example in this regard and they live a very spartan and simple life with no possessions of their own. The followers of the Jain faith are also exhorted to reduce their consumption of material goods, and even today, one can find a large number of people

of this faith who are strict about their diet. Many Jain women, for example, take a restricted diet, doing away with certain vegetables and other consumer items on specific days of the month. In sharp contrast to this, the last 50 years has seen rampant growth of consumer societies in the western world. The extreme growth of materialism in the western countries during this period, and in more recent years in our part of the world, as reflected in vastly increased industrial production, has led to serious problems for the maintenance of the quality of human environment. Also, the indiscriminate patterns of consumption in many countries and the rising population pressures in the developing countries have led to virtual exhaustion of large parts of world's renewable and non-renewable resources. The first casualties have been the forests, the grasslands and the farm lands, including the rich soil cover—all of which have suffered from extreme pressures of urbanization. The second casualty is seen in the pollution of lakes, rivers, and in more recent years, the oceans. So high has been this pollution, that many lakes and rivers can no longer support fish and other forms of life. The third casualty and one which is causing the greatest concern is to be seen in the virtual exhaustion of many of our non-renewable resources, including many of the minerals, sources of energy like petrol and other products which have to be mined. The Document brought by the Club of Rome stressing the limits of future growth gives a vivid picture of the critical position in which the world finds itself today with regard to availability of many of the raw materials.

Jain Concepts and Ecology

This realization about our deteriorating environment, as seen in a depleting ozone layer and increasing concentration of carbon dioxide in the atmosphere, increasing amounts of smoke and fumes in our cities and towns, contaminated water supplies and loss of vast resources of mineral and other products, are now giving rise to a worldwide movement of recycling of resources and conservation of environment and energy. The ultimate answer, however, lies in accepting the message which was given nearly 2500 years ago that overconsumption and other attachment to material goods is not good for human soul. We now find that excessive materialism is not good for the human body also. Already, some diseases like cancer have seen unparalleled rise in the last 30 years in countries like USA. It is well-known that the increased incidences of cancer in the western countries is a function of the widespread use of chemicals of various kinds both in food and in other items of daily use. The world has no alternative except to listen to the kind of messages which the Jain philosophers have been stressing for time immemorial.

In conclusion, it is clear that the Jain religion is intended not merely to save man's soul, it is perhaps even more relevant to his life on this earth. The Jain philosophy relates to the very survival of man as a species.

Agriculture and Culture

The word *Culture* is equivalent to 'cultivation' or 'tillage of soil' which survives in the Latin words—*Agriculture* and *Horticulture*. According to *Oxford Dictionary*, for the first time in 1510 A.D. the Latin word *culture* was used in the sense of cultivation. In France, in the eighteenth century the word *culture* came in use in the sense of 'refinement of mind'. Marthew Arnold popularized this word in his work *Culture and Anarchy* in the modern sense. Thus, the term 'Culture' can be traced to 'Agriculture' which was an epoch-making discovery of human efforts. With the discovery of Agriculture the habits of the nomad people began to develop in institutionalized set-up.

Ancient Indian Culture and Literature (edited by Mohan Chand), Eastern Book Linkers, Delhi, 1980, pp. xxxv-xxxvi